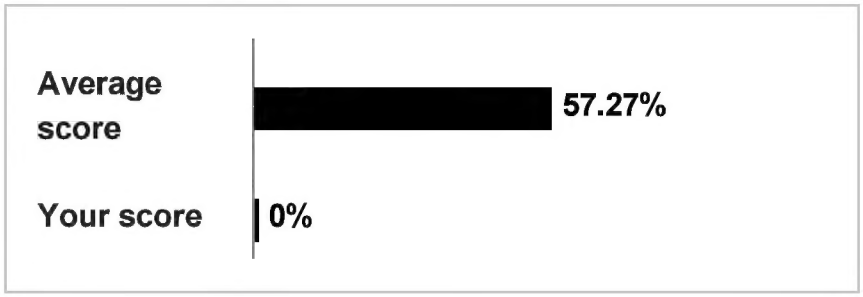
Medicine Quiz 3

Medicine Quiz 3

Results

- 0 of 50 questions answered correctly
- Your time: 00:00:08
- **You have reached 0 of 50 points, (0%)**



Categories

Medicine **0%**

CLICK HERE TO CONTINUE (HTTPS://WWW.AMCQUESTIONBANK.COM/COURSES/AMC-MCQS-QUESTION-BANK-50-MCQS-PER-QUIZ/?QUIZ_TYPE=GLOBAL&QUIZ_REDIRECT=1&COURSE_ID=1882&QUIZ_ID=1963)

SHOW LEADERBOARD | VIEW QUESTIONS | RESTART QUIZ

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

Answered Review

1. Question **1 points**

A 22 year old man comes to the physician because he has developed patches of hair loss in his scalp and beard over several months. The patient's medical history is unremarkable, but his family history is significant for Addison disease in a sister and vitiligo in his mother. Physical examination shows two sharply demarcated areas of total hair loss in the scalp and one in the right cheek. The skin in these areas is perfectly smooth and covered only by sparse short hair shafts. In addition, pitting of nail plates is noted. A biopsy of affected skin demonstrates lymphocytic infiltrates around hair follicles. Which of the following is the most appropriate next step in management?

1. Psychiatric consultation
2. Topical application of minoxidil
3. Oral administration of iron sulfate
4. Topical injections of corticosteroids ✔
5. Systemic corticosteroids

INCORRECT ✖

The correct answer is 4.

The skin condition described is alopecia areata, a form of baldness that may affect any region of the body. Its pathogenesis is probably immune related, considering the frequent association with autoimmune disorders, such as Hashimoto thyroiditis, pernicious anemia, and Addison disease. The finding of perifollicular lymphocytic infiltration in affected areas seems to support an autoimmune origin. The patches of hair loss in alopecia areata are rather haphazardly distributed but sharply demarcated. An important feature is the presence of "exclamation hairs" (tiny hair shafts) in the zone of active shedding. In 80% of cases, the hair re-grows spontaneously, but permanent loss is observed in the other 20%. Local injection of triamcinolone or application of anthralin ointment has been beneficial in hastening recovery.

(Choice 1) may be appropriate for trichotillomania, a compulsive habit of pulling one's own hair. In this disorder, the patches of hair loss are often unilateral (on the right side if the patient is right-handed, and vice versa), have irregular borders, and consistently show growing hairs.

(Choice 2) is widely used for treatment of the most common form of alopecia, namely androgenetic baldness, which is related to androgenic hormonal influences. The pattern of androgenetic baldness is characteristic and well known. Minoxidil treatment results in temporary hair regrowth, especially in patients younger than 50 and those with less extensive areas of hair loss.

(Choice 3) may be beneficial in another form of alopecia, named telogen effluvium. In this condition, an increased number of hairs are lost daily on combing or shampooing. It is due to an increase in the percentage of hairs in telogen (resting) phase and occurs in association with severe malnutrition, termination of pregnancy, stress from surgery or infection, and oral contraceptives. However, some studies have indicated that iron deficiency may play an important causative role in telogen effluvium.

(Choice 5) have not been shown to have any advantage over local injection in cases of alopecia areata.

2. Question

1 points

A 75 year old white man complains to a physician of abdominal pain. His temperature is 37 °C (98.6 °F), blood pressure is 110/65 mm Hg, pulse is 63/min, and respirations are 16/min. The abdomen is soft, with focal tenderness in the left lower quadrant. His erythrocyte count is 4.5 million/mm^3, leukocyte count is 9000/mm^3 with 60% neutrophils and 5% bands, and platelet count is 250,000/mm^3. Serum chemistries show:

Sodium	140 mEq/L
Potassium	5 mEq/L
Chloride	102 mEq/L
Creatinine	1.1 mg/dL
Urea nitrogen	12 mg/dL

Which of the following is the most appropriate next step in diagnosis?

1. Barium enema
2. Colonoscopy
3. CT of abdomen
4. Plain film of abdomen
5. Trial therapy of a liquid diet ✔

INCORRECT ✖

The correct answer is 5.

The probable diagnosis is diverticulitis. The relatively mild symptoms, normal vital signs, and normal laboratory values in this patient indicate that he is not very ill. This means that he can be treated at home with rest, a liquid diet, and oral antibiotics, such as cephalexin. In this setting, the response to the therapeutic trial itself serves as a confirmatory test. In most cases, the symptoms will resolve rapidly on this regimen, and the diet can be gradually advanced to a soft, low-roughage diet supplemented with daily psyllium seed extract. At approximately 1 month, a high roughage diet is resumed. Seriously ill patients with diverticulitis are usually treated in the hospital and may require IV antibiotics. Surgery will be needed in only about 20% of these patients.

(Choice 1) Barium enema studies, typically with air contrast, can be performed if necessary at 2 weeks to confirm the presence of diverticula.

(Choice 2) can be used alternatively to barium enema at 2 weeks to identify diverticula and rule out other conditions, such as proctitis or colon cancer, which would not be as likely in this patient with mild symptoms.
(Choice 3) is used in severe cases when the differential diagnosis includes pelvic abscess and appendicitis.
(Choice 4) is of limited utility in this setting but may show increased gas in the bowel if the diverticulitis has lowered intestinal motility.

3. Question

1 points

A 38 year old man comes to the physician because of slowly progressive visual problems that make him "bump into objects" on both sides. He also reports that, while driving, he has trouble switching lanes because he needs to turn his head all the way backward to look for other cars. Ocular examination shows bitemporal field loss with preserved visual acuity. Examination of the fundus is unremarkable. Which of the following is the most likely diagnosis?

1. Pituitary adenoma ✔
2. Occipital lobe meningioma
3. Optic glioma
4. Optic nerve atrophy
5. Optic neuritis
6. Retinal detachment

INCORRECT ✖
The correct answer is 1.
The visual deficit present in this patient is described as bilateral temporal hemianopia and is due to chiasmatic lesions that compromise the crossing fibers originating from the temporal retina. A large pituitary adenoma (macroadenoma) that extends beyond the sella turcica into the suprasellar region is the most common cause of temporal hemianopia. Craniopharyngioma and meningioma are other causes.
(Choice 2) may push on the visual cortex and produce visual symptoms that are referred to the contralateral half of the visual field (homonymous hemianopia).
(Choice 3) is a tumor of glial origin, usually an astrocytoma that develops within the optic nerve. Visual symptoms develop slowly and are referred to the ipsilateral eye.
(Choice 4) involves damage to the nerve from ischemia, inflammation, glaucoma, toxic substances, and trauma. Symptoms include diminished visual acuity, reduced visual fields, abnormal color vision, and poor pupillary response to light. The optic disc appears pale or white on ophthalmoscopy.

(Choice 5) will result in unilateral visual loss that develops rapidly. Multiple sclerosis is an important cause of optic neuritis.
(Choice 6) results in blurring of vision that affects only one eye. Myopia and cataract extraction are the two most common predisposing factors.

4. Question

1 points

An 18 year old woman complains of myalgias, a sore throat, and painful mouth sores for 3 days' duration. Her temperature is 38.2 °C (100.8 °F), blood pressure is 110/80 mm Hg, pulse is 84/min, and respirations are 15/min. Her gingiva are edematous and erythematous, and there are vesicles on her right upper and lower lips. Her pharynx is mildly erythematous but without exudate, and there is tender mobile cervical lymphadenopathy. Her breath is not fetid, and the dentition is normal. Which of the following is the most likely causal agent?

1. Actinomyces israelii
2. Coxsackievirus
3. Herpes simplex virus 1 ✔
4. Nocardia asteroides
5. Streptococcus pyogenes

INCORRECT ✖

The correct answer is 3.

Gingivostomatitis and pharyngitis are the most frequent clinical manifestations of primary herpes simplex virus 1 (HSV-1) infection, and are most commonly seen in children and young adults. Clinical signs and symptoms include fever, malaise, myalgias, and cervical adenopathy. Common lesions may involve the hard and soft palate, gingiva, tongue, lips, and facial area. The lesions are classically vesicular with an erythematous base.
(Choice 1) causes an indolent suppurative infection. These anaerobic actinomycetes are commensals of the gastrointestinal tract and mouth. The organism may invade via a break in the oral mucosa or via aspiration into the lung. Poor dental hygiene and dental abscesses predispose to cervicofacial lesions. Infection presents as a chronic suppurative lesion with adjacent tissue showing inflammation with fibrosis and draining sinuses. Myalgias and low-grade fevers are rare with facial actinomycetes.
(Choice 2) infection may result in herpangina, an exanthematous disease characterized by acute onset of fever and sore throat. Small vesicular lesions and white papules (lymph nodules) surrounded by a red halo are typically seen over the posterior half of the palate, pharynx, and tonsillar areas. Lip and facial lesions are rare.

(Choice 4) is aerobic actinomycetes that cause disease most often in the lung, but also at any site of tissue trauma. Lesions produced by Nocardia show suppuration, necrosis, and abscess formation with sinus tracts draining purulent material.
(Choice 5) causes streptococcal pharyngitis, with the highest incidence in children aged 5-15 years. Patients usually present with the sudden onset of sore throat, particularly with pain on swallowing. Associated symptoms include fever, malaise, headache, and anorexia. On examination, there is diffuse edema and erythema of the posterior pharynx. The tonsils, if present, are enlarged and erythematous with an exudate. The cervical nodes are tender and enlarged. Oral lesions are limited to the posterior pharynx.

5. Question

1 points

A 35 year old man complains to a physician of chronic vague gastric pain of several years' duration. The pain is sometimes relieved by food. Serum immunoglobulin studies for IgG and IgA antibodies directed against Helicobacter pylori are strongly positive. Endoscopy with gastric antral biopsy demonstrates gastritis but no ulcerative lesions. H. pylori organisms are seen with special stains on the biopsy fragments. The patient is treated with a 1-week course of omeprazole (20 mg bid), plus clarithromycin and metronidazole (500 mg bid each). Which of the following is the most appropriate test to noninvasively determine whether the H. pylori have been eradicated?

1. Culture of gastric biopsy
2. Rapid urease test
3. Repeat qualitative IgA and IgG antibodies against H. pylori
4. Repeat quantitative IgA and IgG antibodies against H. pylori
5. Urea breath test ✔

INCORRECT ✖

The correct answer is 5.

Helicobacter pylori is a small, gram-negative bacterium that lives in and locally destroys the mucus coating that lines the stomach. The organism has been linked to a wide variety of problems, including gastritis, peptic ulcer disease, gastric cancer, and gastric lymphoma. Because of these associations, physicians are tending to become more aggressive about therapy. H. pylori is a hardy organism and requires concurrent therapy with multiple agents for eradication. The original regimen combined bismuth subsalicylate(Pepto-Bismol), tetracycline, and metronidazole, and had only an 80% cure rate in compliant patients who followed the regimen for 2 weeks. The schedule listed in the question stem is a more modern one; it is both easier to follow and has a better cure rate. Alternative regimens may substitute amoxicillin (1 g bid) for metronidazole, or may substitute lansoprazole (30 mg bid) for

omeprazole. These more effective regimens have caused a problem in determining whether eradication has occurred, however, because the course is so short that IgG and IgA antibodies against H. pylori have not had time to decrease by the end of therapy. The urea breath test is a relatively new test in which the patient is given oral urea that has been labeled with 13C or 14C. The H. pylori bacteria contain the enzyme urease and are able to metabolize the urea, producing radioactively labeled co_2, which can be measured in breath samples taken 20-30 minutes after ingestion. It is recommended that this test be delayed until 4 weeks after the end of the regimen, since recent antibiotic use may have decreased the number of organisms enough to produce a negative test, without having achieved true eradication.
(Choice 1) is highly specific but requires both endoscopic biopsy and fastidious culture technique. Therefore, this method is not often used clinically for follow-up studies.
(Choice 2) is performed on gastric tissue. It is rapid, specific, and sensitive, but requires endoscopy to obtain the biopsy fragment.
(Choice 3) Qualitative assays of antibodies against H. pylori may be positive for up to 3 years after eradication of the infection.
(Choice 4) Quantitative assays of antibodies against H. pylori drop slowly for up to a 3 years after eradication of the infection.

6. Question

1 points

A 52 year old man comes to the physician because of slowly progressive weakness in his legs. He also complains of clumsiness with his right hand, which creates difficulties with buttons or turning keys. Examination reveals mild bilateral footdrop and leg weakness. Fasciculation and mild wasting are observed in the calf muscles. There is no spasticity or impaired sensation. The speech is normal, but fasciculation of the tongue is appreciated. Respiration, pulse, and temperature are normal. A muscle biopsy shows evidence of denervation with reinnervation. Which of the following is the most likely diagnosis?

1. Amyotrophic lateral sclerosis(ALS) ✔
2. Charcot-Marie-Tooth disease
3. Guillain-Barre syndrome
4. Myasthenia gravis
5. Spinal muscular atrophy

INCORRECT ✖

The correct answer is 1.
Flaccid paresis involving the lower extremities, footdrop, hand clumsiness, muscle wasting, and especially fasciculation in a middle-aged person are highly suggestive of amyotrophic lateral sclerosis (ALS).This results from degeneration of the motor neurons in the spinal cord (lower motor neuron) and leads to denervation of skeletal muscle. His tongue fasciculations result from degeneration of motor neurons of cranial nerve nuclei (XII).Continued bulbar involvement will likely eventually affect pharyngeal and facial musculature, leading to progressive dysarthria and dysphasia. Surviving neurons may Reinnervate denervated myofibers by sprouting of their axons. The finding of denervation/reinnervation in a muscle biopsy is confirmatory of the clinical diagnosis. The patient will later develop evidence of corticospinal and cortico-bulbar (upper motor neuron) degeneration as his disease progresses.
(Choice 2) is an autosomal recessive demyelinating disease of peripheral nerve that manifests in children or young adults with marked atrophy of the calf muscles and distal muscle weakness. For this reason, the disorder is also known as peroneal muscular atrophy.
(Choice 3) manifests with ascending paralysis (first the lower, then the upper extremities are involved) and results from a chronic inflammatory response leading to demyelination of peripheral nerves. It is often preceded by an upper respiratory tract infection.
(Choice 4) is characterized by fluctuating muscle weakness that usually begins in the ocular muscles, resulting in diplopia and ptosis. Since the disorder is due to impaired cholinergic transmission at the neuromuscular junction, skeletal muscle biopsy is within normal limits at the light microscopic level.
(Choice 5) is the infantile counterpart of ALS. SMA is a group of hereditary disorders, the most frequent form of which is Werdnig-hoffmann disease (SMA type 1), which leads to death by the 3rd year of life.

7. Question

1 points

An 18 year old man is referred for evaluation of hypertension. On examination, he appears in no apparent discomfort and states that he has never had any health problems. His height is 175 cm (69 in), and his weight is 70 kg (154 lb). There is no pitting edema in the lower legs or jugular vein distention. The lungs are clear to auscultation. Blood pressure is 162/80 mm Hg in the upper extremities and 115/77 mm Hg in the lower extremities. Femoral pulses are weaker than radial pulses. A systolic murmur is appreciated at the base of the heart and is particularly intense in the back. The ECG shows changes consistent with left ventricular hypertrophy, and a chest x-ray film reveals notching of the inferior margins of the ribs. Which of the following is the most likely diagnosis?

1. Atrial septal defect (ASD)
2. Coarctation of the aorta ✔

3. Congenital aortic stenosis
4. Congenital pulmonary stenosis
5. Patent ductus arteriosus
6. Tetralogy of Fallot

INCORRECT ✖

The correct answer is 2.

The specific signs that suggest the correct diagnosis include the wide discrepancy between the blood pressure in the upper extremities and lower extremities, the systolic murmur heard on the back, and the notching of the ribs appreciated on x-ray. Coarctation of the aorta, in its most frequent (adult) type, consists of a stenotic aortic segment just distal to the origin of the left subclavian artery. Hypertension develops in the branches proximal to the stenosis, and hypotension in the aorta distal to it. In the most severe forms, the patients may develop left ventricular failure in infancy, but the most common presenting picture is that of a young adult with hypertension, which may lead to left ventricular hypertrophy or cerebral hemorrhage.

(Choice 1) is generally asymptomatic. A large ASD usually leads to right ventricular failure in middle age. A systolic murmur is heard at the pulmonary area, and S2 is widely split.

(Choice 3) gives rise to a harsh systolic murmur heard along the left sternal border and radiating to the neck. It is due to congenitally abnormal, usually bicuspid, aortic valves.

(Choice 4) is a rare form of congenital valvular disease. Mild-to-moderate stenosis is usually asymptomatic, but severe cases result in right-sided heart failure or sudden death. A systolic murmur is heard at the second left intercostal space, often preceded by an ejection click.

(Choice 5) Adults with a small or medium-size patent ductus arteriosus are usually asymptomatic until middle age. This anomaly is associated with a characteristic continuous "machinery-like" murmur, which is maximal at the pulmonary area and often accompanied by a thrill.

(Choice 6) is the most common form of cyanotic congenital heart disease. The four features include subpulmonary stenosis, ventricular septal defect, overriding aorta, and right ventricular hypertrophy. The degree of subpulmonary stenosis is the single most important determinant of the clinical severity and symptomatology. Most infants present with early cyanosis.

8. Question

1 points

A 50 year old alcoholic man with chronic hepatitis C infection is brought to the emergency department by the police, who notice that the man has blisters and crusted lesions on sun-exposed skin of his face and lower arms. Plasma Porphyrins are elevated, and follow-up studies demonstrate elevated uroporphyrin I in urine and isocoproporphyrin in feces. A biopsy of one of the

lesions reveals subepidermal blisters with minimal inflammation, thickening of vessel walls in the papillary dermis, marked solar elastosis, and “caterpillar bodies” in the roof of the blister. Which of the following is the most likely diagnosis?

1. Acute intermittent porphyria
2. Delta-aminolevulinic acid dehydratase deficiency
3. Erythropoietic protoporphyria
4. Hereditary coproporphyria
5. Porphyria cutanea tarda ✔

INCORRECT ✖

The correct answer is 5.

Porphyria cutanea tarda is the most common of all of the porphyrias, and is consequently a likely target on the USMLE. It causes chronic blistering and crusting lesions on sun-exposed skin. The defective enzyme in heme synthesis is uroporphyrinogen decarboxylase. Precipitating factors include iron (even in normal amounts in some cases), estrogen use, alcohol use, and chronic hepatitis C infection. Skin biopsy can be helpful but is usually not completely specific (the “caterpillar bodies” in the question stem are clumps of basement membrane material). Porphyrin analyses demonstrate the findings in the question stem.

(Choice 1) is one of the more common forms of porphyria and typically presents with severe abdominal pain.

(Choice 2) is a rare form of porphyria that can cause abdominal pain and hemolysis.

(Choice 3) is one of the more common forms of porphyria and typically presents with acute, rather than chronic, photosensitivity with pain and swelling after sunlight exposure.

(Choice 4) is a rare porphyria than presents with abdominal pain.

9. Question

1 points

A 30 year old woman is seen in the emergency department because of severe abdominal pain. The pain has been progressively worse for the past day and is accompanied by nausea, vomiting, and diarrhea. The patient has had several similar episodes in the past that developed over the course of hours to days and lasted for a week or more. She has had surgeries for suspected appendicitis and suspected biliary tract disease, neither of which was confirmed once the abdomen was entered. Her temperature is 37 °C (98.6 °F), blood pressure is 140/100 mm Hg, pulse is 120/min, and respirations are 16/min. Abdominal examination demonstrates minimal abdominal tenderness and rebound tenderness. Measurement of which of the following will most likely confirm the diagnosis?

1. Erythrocyte Porphyrins
2. Fecal porphyrins
3. Plasma porphyrins
4. Urine porphobilinogen ✔
5. Urine porphyrins

INCORRECT ✖

The correct answer is 4.

The porphyrias are due to metabolic defects in heme synthesis. Although they occur in a variety of forms, the most common are acute intermittent porphyria (which this patient has), erythropoietic protoporphyria (which presents with painful skin and acute swelling),and porphyria cutanea tarda (which presents with chronic blistering skin lesions). Acute intermittent porphyria characteristically presents with neurovisceral symptoms, which may mimic an acute abdomen. The abdominal pain produced is a nerve problem rather than an inflammation, which is why exploratory surgery in these patients is usually unrewarding. Patients with long-standing cases may have demonstrable damage to motor nerves as well, which typically begins as weakness in the shoulders and arms. The condition is relatively rare (although it is the most common acute porphyria); therefore, it is suspected more often than it is confirmed. The combination of complaints of severe pain, distraught behavior, and absence of physical findings may lead clinician to suspect the patient either is abusing drugs or has psychiatric problems. Failure to make the diagnosis also raises the risk of potentially dangerous complications because of drug interactions with the disease (barbiturates are a notorious offender). The biochemical defect in acute intermittent porphyria is a block in porphobilinogen deaminase. Determination of urinary porphobilinogen levels, which are best measured in a 24-hour urine collected during the period when the patient is symptomatic, is the most important screening test for acute intermittent porphyria. Aminolevulinic acid (ALA),which is an early precursor in heme synthesis, is also elevated in the urine. IV heme can be given for therapy.

(Choice 1) can be used to screen for erythropoietic protoporphyria.

(Choice 2) are a second-line choice for screening for porphyria cutanea tarda.

(Choice 3) can be used to screen for either porphyria cutanea tarda or erythropoietic porphyria.

(Choice 5) can be used to screen for porphyria cutanea tarda.

10. Question **1 points**

An otherwise healthy 15 year old boy undergoes evaluation for a newly diagnosed ventricular septal defect (VSD). The boy is at the 50th percentile for height and 45th percentile for weight. He plays soccer regularly with his school team and has never had any significant health problems. His blood pressure is 120/76 mm Hg, pulse is 72/min, and respirations are 11/min. An ECG is unremarkable, but echocardiography demonstrates a defect in the upper interventricular septum with cardiac chambers of normal size. Doppler ultrasound and radionuclide flow studies reveal a small left-to-right shunt with a pulmonary-to-systemic flow ratio of less than 1.5. Which of the following is the most significant complication of this patient's condition?

1. Arrhythmia
2. Infective endocarditis ✔
3. Pulmonary hypertension
4. Right-sided heart failure
5. Shunt reversal

INCORRECT ✖

The correct answer is 2.

A small ventricular septal defect (VSD) is usually asymptomatic, manifesting with a systolic murmur sometimes associated with a thrill along the left sternal border. Patients with the typical murmur as the only manifestation have a normal life expectancy but are more prone to develop infective endocarditis. Thus, antibiotic prophylaxis is mandatory before dental procedures or other procedures that might produce bacteremia.

(Choice 1) do not constitute a particular risk for patients with VSD.

(Choices 3 & 4) A large VSD leads to a significant left-to-right shunt, which increases the right ventricular load and results in pulmonary hypertension and right ventricular hypertrophy. The long-term effect of these hemodynamic alterations is right-sided heart failure. A shunt associated with a pulmonary-to-systemic flow ratio of less than 1.5 is hemodynamically inconsequential and should not be repaired surgically. Large shunts should be repaired to prevent late-onset pulmonary hypertension and heart failure.

(Choice 5) develops when the right ventricular pressure exceeds that in the left ventricle and the shunt becomes right-to-left. This is a long-term complication of unrepaired large VSDs.

11. Question

1 points

A 33 year old man presents with recurrent pain and swelling of the right knee. These symptoms started 4 years ago and are often precipitated by minor trauma. The joint fluid has been tested during acute episodes, and although clearly inflammatory, there has been no evidence of urate crystals, bacteria, or blood. Clinical examination reveals a moderately swollen and tender joint. A

complete blood count (CBC), prothrombin time (PT), partial thromboplastin time (PTT), and serum chemistries are normal. X-ray films show speckling of the articular cartilage and increased joint space without marginal erosions. Which of the following is the most likely diagnosis?

1. Hemophiliac arthritis
2. Lyme arthritis
3. Monarticular rheumatoid arthritis
4. Osteoarthritis
5. Pseudogout ✔
6. Psoriatic arthritis

INCORRECT ✖

The correct answer is 5.

Recurrent episodes of inflammatory arthritis, absence of urate crystals, and speckling (due to calcification) of the articular cartilage are virtually diagnostic of pseudogout. The knee is the most common joint involved. Identification of calcium pyrophosphate crystals in joint aspirates is diagnostic (weakly birefringent on polarized microscopy). It may be hereditary, may develop 24-28 hours after surgery, or may be associated with metabolic diseases, such as hyperparathyroidism, hemachromatosis, hypomagnesemia, acromegaly, Wilson disease, hypothyroidism, and gout.

(Choice 1) Recurrent hemorrhages into joints, especially the knees, are characteristic of poorly treated hemophilia. Minor or unappreciated trauma may precipitate individual events. Healing is associated with inflammation and proliferation of the synovial membrane, and can lead to significant joint destruction. Widening of the intercondylar notch of the femur is characteristic. Other clinical features of hemophilia are invariably present.

(Choice 2) Chronic monarticular or oligo articular involvement, especially of the knee, is a feature of Lyme disease. The primary stage of the disease may be unrecognized. Calcification or erosions of the articular cartilage do not occur.

(Choice 3) Rheumatoid arthritis is uncommonly monarticular and enters the differential diagnosis. Rheumatoid factor in the joint fluid may be positive, even when the serum rheumatoid factor is not. The pattern of presentation is chronic, rather than recurrent acute, monarticular arthritis.

(Choice 4) Osteoarthritis at age 33, in the absence of prior major trauma, would be rare. Crystal arthropathy may coexist with degenerative arthritis, and the latter can progress more rapidly in the presence of crystal induced damage. Acute exacerbation of stable osteoarthritis should be evaluated for coexistent crystal arthritis, as the management strategy may be altered.

(Choice 6) Psoriatic arthritis classically involves distal interphalangeal joints and characteristic changes in the nails (pitting, transverse ridging, and onycholysis). In the majority of cases, characteristic skin lesions are present before joint lesions appear. On x-

ray, there are gross destructive changes in isolated small joints with associated erosions, ankylosis, and a “pencil-in-cup” appearance.

12. Question

1 points

A 25 year old man with a 7-year history of ulcerative colitis consults a physician because of the insidious onset of progressive fatigue, pruritus, and jaundice. Laboratory studies are notable for elevation of serum alkaline phosphatase that is not accompanied by significant elevations of aspartate aminotransferase (AST) or alanine aminotransferase (ALT). An anti-mitochondrial antibody test is negative. Endoscopic retrograde cholangiography demonstrates multiple short strictures and saccular dilations of the biliary tree, both in extrahepatic and intrahepatic sites. Liver biopsy demonstrates bile duct proliferation, periductal fibrosis, inflammation, and loss of bile ducts. Which of the following is the most likely explanation for these findings?

1. Bile duct tumor
2. Choledocholithiasis
3. Congenital polycystic liver
4. Primary biliary cirrhosis
5. Primary sclerosing cholangitis ✔

INCORRECT ✖

The correct answer is 5.

Primary sclerosing cholangitis is a condition in which fibrosing inflammation of the intrahepatic and extrahepatic bile duct system eventually lead to the obliteration of the bile ducts and development of cirrhosis. The underlying etiology of the damage is unclear, although toxic, infectious, and/or autoimmune mechanisms have been postulated. The clinical presentation illustrated in the question stem is typical. The association with inflammatory bowel disease, particularly ulcerative colitis, may provide a helpful clue. In some patients, AST and ALT may be mildly increased. The liver biopsy picture may be similar in primary sclerosing cholangitis and the related condition, primary biliary cirrhosis. The antimitochondrial antibody test can be helpful, because it is negative in primary sclerosing cholangitis and positive in roughly 95% of cases of primary biliary sclerosis. The most definitive study is endoscopic retrograde cholangiography, which establishes that the bile duct lesions extend outside the liver.

(Choice 1) Although a bile duct tumor can cause a localized dilatation of the bile duct system proximal to the lesion, it would not produce the characteristic pattern of alternating saccular dilations and strictures seen in this patient with endoscopic retrograde cholangiography.

(Choice 2) is a stone in the extrahepatic bile duct system and would be seen on endoscopic retrograde cholangiography as a blockage to the flow of contrast dye.
(Choice 3) is a rare condition that can produce massive hepatomegaly but usually causes surprisingly few medical problems.
(Choice 4) can have a very similar biopsy appearance to primary sclerosing cholangitis. However, it does not have extrahepatic bile duct disease and usually is positive for antimitochondrial antibodies.

13. Question **1 points**

One day after sustaining a laceration of the right hand at work, a 28 year old man comes to the emergency department because of fever, chills, and painful swelling of the right arm. His temperature is 39.4 °C (103 °F), blood pressure is 110/65mm Hg, pulse is 110/min, and respirations are 20/min. His right arm is swollen and extremely tender from the elbow up to the shoulder. The skin shows a diffuse dusky erythema. Sensation to touch and pain is reduced in the forearm and hand. A blood sample is immediately taken for cultures. Which of the following is the most appropriate next step in management?

1. Supportive measures until culture results are available
2. Treatment with clindamycin
3. Treatment with penicillin V
4. Parenteral treatment with penicillin G
5. Parenteral treatment with vancomycin
6. Surgical exploration and debridement ✔

INCORRECT ✖
The correct answer is 6.
The acute symptomatology is consistent with necrotizing fasciitis, a severe infection of the subcutaneous tissue and fascia caused by group A streptococci. The bacteria gain entry into the subcutaneous tissue through a skin lesion and produce rapidly spreading cellulitis, combined with systemic signs and symptoms of toxemia. Anesthesia/hypoesthesia is a particularly important clue to the diagnosis. As soon as necrotizing fasciitis is suspected, surgical exploration and debridement is mandatory.
(Choice 1) Limiting care to supportive measures until culture results are available may permit rapid necrosis of the affected limb and death due to septic shock.
(Choices 2 & 3) Treatment with clindamycin or penicillin V is appropriate for patients with streptococcal skin infections that are not sufficiently severe to warrant parenteral treatment.
(Choices 4 & 5) Parenteral treatment with vancomycin or penicillin G is used for skin

infections (especially erysipelas)due to streptococci. Penicillin remains the drug of choice for the treatment of streptococcal infections, but vancomycin may be used in severely penicillin-allergic patients. Erysipelas is not associated with such severe systemic signs of infection and usually involves the face.

14. Question

1 points

Over a 2-month period, a 50 year old woman with a history of polycythemia vera develops abdominal pain and gross ascites. Physical examination demonstrates smooth hepatomegaly and mild jaundice. Pressure applied over the liver fails to distend the jugular veins. The abdominal wall is grossly edematous and shows a tortuous venous pattern. Edema of the legs is prominent. Which of the following is the most likely diagnosis?

1. Budd-Chiari syndrome ✔
2. Hepatic cirrhosis
3. Hepatocellular carcinoma
4. Primary sclerosing cholangitis
5. Steatosis

INCORRECT ✖

The correct answer is 1.

Budd-Chiari syndrome is a disorder in which hepatic venous outflow is obstructed because of thrombosis of the major hepatic veins. The blood clots may extend into the inferior vena cava, causing the abdominal wall signs and edema of the legs illustrated in the question stem. The condition is rare and typically occurs in the setting of a coagulopathy due to hematologic disease (myeloproliferative disorders, polycythemia vera, sickle cell disease, paroxysmal nocturnal hemoglobinuria) or in disorders of the coagulation (defects in normal inhibitors, such as antithrombin III, protein C, protein S, factor V Leiden; antiphospholipid antibodies; and possibly high estrogen states, such as oral contraceptive use or pregnancy). The disorder either presents with acute hepatic failure, or, more commonly, progresses over several months. Early recognition of the syndrome is important so that thrombolytics and long-term anticoagulation can be given. Some patients respond to medical management, whereas others with fulminant or end-stage disease may require liver transplantation.

(Choice 2) develops slowly and produces a nodular liver.

(Choice 3) would produce a liver mass. Ascites is a late finding and usually develops slowly.

(Choice 4) is an inflammation of the bile ducts that does not usually produce ascites unless it has progressed to cirrhosis.

(Choice 5), or fatty liver, does not produce ascites.

15. Question **1 points**

A previously healthy, 48 year old woman presents with easy fatigability, anorexia, and a 5-kg (11-lb) weight loss for 2 months. She also reports night sweats and occasional temperatures to 38 C (100 F). On examination, the spleen is palpable 4 cm below the left costal arch. Blood tests reveal a hemoglobin of 16 g/ dL, 500,000 platelets/mm^3, and 170,000 leukocytes/mm^3 The differential count shows a left shift, with predominance of mature granulocytes, bands, and metamyelocytes; blasts are 3%. Serum chemistry is remarkable for low leukocyte alkaline phosphatase and high uric acid. Cytogenetic studies demonstrate the presence of the Philadelphia chromosome in white blood cells. Which of the following is the most likely diagnosis?

1. Acute myelogenous leukemia (AML)
2. Chronic lymphocytic leukemia (CLL)
3. Chronic myelogenous leukemia (CML) ✔
4. Leukemoid reaction
5. Myelofibrosis

INCORRECT ✖

The correct answer is 3.

Chronic myelogenous leukemia (CML) is a myeloproliferative disorder developing from neoplastic transformation of a bone marrow stem cell that still retains the capacity to differentiate along erythrocytic, megakaryocytic, granulocytic, or monocytic lines. Thus, the peripheral blood in CML is characterized by striking leukocytosis, with myeloid cells present at different degrees of differentiation and in direct proportion to their degree of maturation. Therefore, immature cells-blasts and promyelocytes are less numerous than mature granulocytes or monocytes. Blasts are usually less than 5%. CML is characterized by the presence of the Philadelphia chromosome, arising from a balanced translocation involving 9q and 22q. This results in the formation of a bcr/abl fusion gene encoding a protein with tyrosine kinase activity. The presence of the Philadelphia chromosome is definitive evidence for CML.

(Choice 1) results from neoplastic transformation of a stem cell that has lost the capacity to differentiate fully into mature blood cells. Thus, large numbers of blasts are present in peripheral blood and bone marrow. The Philadelphia chromosome is absent in most cases. The morphology of leukemic cells and their cytogenetic abnormalities define the seven subtypes of AML. The most frequent form (with full myeloid maturation), is associated with t(8;21).

(Choice 2) and its lymphomatous counterpart-small lymphocytic lymphoma-derive from neoplastic proliferation of small, well-differentiated lymphocytes. CLL is associated with marked lymphocytosis (up to 200,000/mm^3) in peripheral blood. Patients present with fatigue and lymphadenopathy, but often lymphocytosis is discovered incidentally.
(Choice 4) is an exuberant form of leukocytosis (with leukocyte counts up to 50,000/mm^3) that may follow infections. Sometimes it is difficult to distinguish between true leukemia and a leukemoid reaction, but presence of the Philadelphia chromosome rules out the latter. Leukocyte alkaline phosphatase is elevated in leukemoid reaction, low in CML.
(Choice 5) is a chronic myeloproliferative disorder characterized by marrow fibrosis and widespread extramedullary hematopoiesis, resulting in massive splenomegaly. The Philadelphia chromosome is absent. Teardrop erythrocytes are characteristically present in peripheral blood smears.

16. Question

1 points

A 60 year old alcoholic man is admitted to the emergency department with hematemesis. His pulse is 110/min, blood pressure is 100/60 mm Hg, and respirations are 19/min. He has multiple spider angiomata on his back and chest, with bilateral gynecomastia. Abdominal examination is significant for hepatosplenomegaly, and his abdomen is distended and tympanic on percussion; a fluid level is easily detectable. His testicles are small, and a rectal examination produces guaiac-negative stool. His hematocrit is 23%. After placement of a nasogastric tube, 400 mL of bright red blood is evacuated. After initial fluid resuscitation, which of the following is the most appropriate next step in management?

1. Barium swallow
2. Esophageal balloon tamponade
3. Esophagogastroscopy ✔
4. Exploratory celiotomy
5. Selective angiography
6. Transjugular intrahepatic portosystemic shunt

INCORRECT ✖

The correct answer is 3.

The patient has a history of alcohol abuse and signs of chronic liver disease, and now presents with an upper gastrointestinal bleed (UGIB). The sudden onset of hematemesis in the absence of abdominal pain in a patient with chronic liver disease is consistent with hemorrhage from esophageal varices. However, one half to two thirds of patients with cirrhosis who present with a UGIB have a non variceal source, and many have more than

one source. Therefore, prompt identification of the origin of bleeding is crucial to guiding therapy. Esophago gastro scopy is the appropriate first step in identifying, and in many cases treating, the source of bleeding.
(Choice 1) has no role in the diagnosis of a UGIB.
(Choice 2) is used in patients with a confirmed diagnosis of variceal hemorrhage who continue to bleed despite endoscopic treatment.
(Choice 4) is reserved for patients who continue to bleed despite endoscopic therapy.
(Choice 5) is used only when esophagogastroscopy has failed to reveal a bleeding source.
(Choice 6) is a percutaneous connection within the liver, between the portal and systemic circulations. TIPS placement diverts portal blood flow into the hepatic vein and thus decreases the pressure gradient in patients with portal venous hypertension. TIPS is indicated in acute variceal bleeding that cannot be successfully controlled with medical treatment. Therefore, it would not be used in this patient until other measures have been attempted.

17. Question

1 points

A 72 year old man with a history of peripheral vascular disease and recurrent chest pain underwent cardiac catheterization 3 hours ago. Angiography showed 80% occlusion of the left main coronary artery. He now complains of diarrhea and severe constant midabdominal pain. On examination, his temperature is 37.2 °C (99.0 °F), blood pressure is 170/90mm Hg, pulse is 102/min, and respirations are 22/min. The lungs are dear, and the abdomen is soft and nondistended without focal tenderness. Bowel sounds are hypoactive, and no masses are palpable. Rectal examination reveals occult blood in the stool. Which of the following is the most likely diagnosis?

1. Gastric ulcer
2. Mesenteric ischemia ✔
3. Pancreatitis
4. Perforated duodenal ulcer
5. Staphylococcal gastroenteritis

INCORRECT ✖

The correct answer is 2.

This patient has mesenteric arterial occlusion with ischemia as a complication of an angiographic procedure. This is a typical case of iatrogenic occlusion. This patient is very susceptible to this complication because of his history of peripheral vascular disease, coronary artery disease, and severe atherosclerotic disease. Iatrogenic mesenteric ischemia occurs most commonly after angiographic procedures or operations on the aorta.

Angiography may cause intestinal ischemia by dislodging of atheromata from a diseased vessel wall, by dissection of the vessel, or by formation of the intimal flap. Mesenteric ischemia is accompanied by sudden severe epigastric and midabdominal pain. Forceful vomiting and evacuation of stool commonly follow the onset of pain. Early after embolization, physical examination of the abdomen may be entirely unremarkable. Later, a classic presentation is severe abdominal pain out of proportion to physical findings. Abdominal distention, guarding, and absence of bowel sounds are associated with intestinal infarction and imply disease progression. Stool may be positive for occult blood. No laboratory tests are pathognomonic for mesenteric embolism or visceral ischemia.

(Choice 1) Pain from a gastric ulcer would not occur suddenly. In addition, if this patient had a perforated gastric ulcer, he would have some local signs of peritonitis, and the abdominal examination would correlate more closely with the degree of abdominal pain, unlike the situation with mesenteric ischemia.

(Choice 3) Pancreatitis does not occur as a result of cardiac catheterization. It can occur after endoscopic retrograde cholangiopancreatography (ERCP) with dye injection into the pancreatic duct. In addition, pancreatitis does not lead to occult blood in the stool.

(Choice 4) Abdominal examination of a patient with a perforated duodenal ulcer would reveal some local signs of peritonitis, and the patient's symptoms would not be so "out of proportion" to the abdominal examination.

(Choice 5) Staphylococcal food poisoning/gastroenteritis usually occurs 3-6 hours after ingestion of contaminated food. However, this patient had a cardiac catheterization; he did not eat a tuna sandwich with contaminated mayonnaise. Furthermore, vomiting is usually the prominent symptom with staphylococcal food poisoning.

18. Question

1 points

A 22 year old man presents with a 6-month history of non-bloody diarrhea, malaise, recurrent abdominal cramps, and temperatures to 38.5 °C (101.3). At this time, he is afebrile. Examination reveals a palpable, ill-defined mass in the right lower quadrant of the abdomen. Palpation causes local tenderness without guarding. Oral ulcers are also noted. Laboratory studies show:

Hemoglobin	11.5 g/dL
Leukocyte count	12,800/mm^3
Albumin	2.8 g/dL
Sedimentation rate	45 mm/h

An upper gastrointestinal series with small bowel follow through reveals a sharply demarcated stenotic segment in the terminal ileum. The patient under goes laparotomy, and the involved segment of ileum is resected. Which of the following is the most likely diagnosis?

1. Carcinoma
2. Celiac disease

3. Chronic appendicitis
4. Crohn disease ✔
5. Pseudomembranous colitis
6. Ulcerative colitis

INCORRECT ✖

The correct answer is 4.

The clinical picture is consistent with Crohn disease (CD). Non bloody diarrhea, abdominal pain and cramps, malaise, and low-grade fever are the most common, but rather nonspecific, presenting symptoms. CD affects the terminal ileum most frequently (hence the old designation of terminal ileitis), so that tenderness and a mass can often be detected on palpation in the lower left quadrant of the abdomen. The most characteristic signs of CD include sharp demarcation of affected segments from adjacent non-involved loops and presence of non-necrotizing granulomas in biopsies. Strictures resulting in bowel obstruction may necessitate surgical resection, as in this case.

(Choice 1) is highly unlikely, considering the clinical picture, location of lesion (small bowel cancer is rare), and young age of the patient.

(Choice 2) is a chronic diarrheal disease that is characterized by intestinal malabsorption and precipitated by indigestion of gluten-containing foods. The disease also presents with non bloody diarrhea, cramps, and abdominal distension due to fluid- and gas-filled intestinal loops. Distinguishing features on small bowel series are flocculation of barium, small bowel dilatation, and flattening of normal mucosal fold pattern. Occasionally ulceration and strictures may occur.

(Choice 3) is a rather controversial entity. Repeated bouts of acute appendicitis, especially when incompletely controlled with antibiotic therapy, may rarely result in periappendiceal and pericolic adhesions.

(Choice 5) is due to the toxins produced by Clostridium difficile. This condition develops as a complication of broad-spectrum antibiotic treatment, particularly in hospitalized patients. It affects the colon (not the ileum) and manifests with greenish, foul-smelling diarrhea. Endoscopic and pathologic examination reveal the characteristic yellow green plaques adherent to the mucosa.

(Choice 6) shares with CD many clinical and pathologic features, so that an “umbrella” designation of inflammatory bowel disease is used to refer to both conditions when a specific diagnosis is not yet made. Features not consistent with UC (thus favoring CD) include involvement of ileum (which is exceptional in UC), sharp demarcation of the affected bowel segment, and presence of granulomas on histologic examination.

19. Question **1 points**

A 55 year old male smoker with diabetes and hypertension presents with complaints of chest pain on exertion. Exercise stress testing shows reversible ischemia in the anteroseptal portion of the heart after exercising4 minutes. Cardiac catheterization reveals an 80% stenosis of the left main coronary artery. Which of the following is the most appropriate intervention?

1. Re-examination in 6 months or sooner if symptoms worsen
2. β-blocker
3. Sublingual nitroglycerin as needed
4. Percutaneous balloon angioplasty
5. Coronary artery bypass grafting ✔

INCORRECT ✖

The correct answer is 5.

This patient has exertional angina, an abnormal stress test, and occlusive atherosclerotic disease of the left main coronary artery. He is at high risk for adverse cardiac events, including myocardial infarction and death, and should receive treatment. The treatment of choice is coronary artery bypass grafting, which has been shown to decrease symptoms and mortality in patients with left main coronary artery disease.

(Choice 1) The patient needs immediate treatment, so instructing the patient to return in 6 months is unwise.

(Choice 2) β-blockers decrease the anginal symptoms of and mortality from coronary artery disease, but are not a replacement for definitive revascularization procedures. Furthermore, their use may be contraindicated in diabetics, as these agents can intensify hypoglycemia while masking hypoglycemic symptoms.

(Choice 3) Sublingual nitroglycerin is helpful in managing the anginal pain of coronary artery disease but does nothing to alter the course of the disease or decrease mortality.

(Choice 4) Angioplasty is not an option in the therapy of left main disease, since inflating the balloon completely occludes the lumen of the artery and transiently interrupts all blood flow to the myocardium.

20. Question

1 points

A 55 year old woman with a history of rheumatoid arthritis since age 28 presents with new symptoms of recent onset. She complains of persistent fatigue and weight loss, diarrhea, and leg swelling. Furthermore, she has had pain in her wrists with a tingling sensation at the tips of thumb and first two digits, which bothers her especially at night. Examination reveals waxy skin plaques about the axillary folds, macroglossia, hepatosplenomegaly, pitting edema of the legs, and

peripheral neuropathy. The stool guaiac test is positive. Serum chemistry studies show only mild hypoalbuminemia. Proteinuria in the nephrotic range is found on urinalysis, without hematuria. Which of the following is the most appropriate next step in diagnosis?

1. Electrophoresis of serum proteins
2. X-rays of vertebral column and skull
3. Biopsy of skin, rectal mucosa, or abdominal fat ✔
4. Renal biopsy
5. Endomyocardial biopsy

INCORRECT ✖

The correct answer is 3.

Long-standing rheumatoid arthritis is currently one of the most common causes of systemic amyloidosis. This may give rise to a complex clinical picture resulting from amyloid deposition in the skin, kidneys, tongue, gastrointestinal tract, or peripheral nerves, for example. Carpal tunnel syndrome, skin plaques in the axillary region, nephrotic syndrome, hepatosplenomegaly, and macroglossia, are among the most common manifestations. Chronic diarrhea with malabsorption and occult bleeding are frequent as well. Biopsies of the skin, rectal mucosa, abdominal fat pad, or gingiva are the most helpful to confirm the clinical diagnosis.

(Choice 1) is useful in demonstrating monoclonal gammopathy, which is usually associated with plasma cell neoplasia or dyscrasia. Multiple myeloma is a frequent cause of amyloidosis, but this condition is accompanied by osteolytic bone lesions, bone pains, spontaneous fractures, anemia, and propensity for infections.

(Choice 2) should be considered when there is clinical evidence suggesting multiple myeloma as the underlying cause of amyloidosis. The clinical history in this case suggests rheumatoid arthritis as the most likely underlying etiology.

(Choices 4 & 5) Renal biopsy and en do myocardial biopsy may also be used to demonstrate amyloid deposition in the myocardium or kidney, but these should be used only when other, less invasive procedures have been ineffective.

21. Question

1 points

A 68 year old woman complains of numbness and difficulty walking. Family members mention that her behavior has also become erratic over the past several months. She has a past medical history of Crohn disease, for which she underwent ileal resection 10 years ago. Laboratory results indicate

a hematocrit of 20% and a mean corpuscular volume (MCV) of 110 μm^3 Blood smear shows large red cells with hypersegmented neutrophils. Which of the following is the most likely cause of these findings?

1. Ferrochelatase deficiency
2. Folate deficiency
3. Hydroxymethylbilane synthase deficiency
4. Intrinsic factor deficiency
5. Iron deficiency anemia
6. Vitamin malabsorption ✔

INCORRECT ✖

The correct answer is 6.

The ileal resection indicates that this patient is not absorbing the vitamin B_{12}-intrinsic factor complex, leading to vitamin B12 deficiency. This deficiency can result in dorsal column degeneration, causing the observed neurologic symptoms. Vitamin B12 deficiency will also cause macrocytic anemia and lead to the development of hypersegmented neutrophils.

(Choice 1) would lead to erythropoietic protoporphyria, which is inherited as an autosomal dominant trait. Skin photosensitivity begins in childhood. The CNS is spared. It is similar to sideroblastic anemia in its hematologic manifestation.

(Choice 2) should not produce the neurologic symptoms observed, although it would certainly cause macrocytic anemia.

(Choice 3) Hydroxymethylbilane synthase (RMB-synthase) deficiency causes acute intermittent porphyria. It is inherited in an autosomal dominant manner. Abdominal pain is the most common symptom. Acute attacks may be manifested by anxiety, insomnia, depression, hallucinations, and paranoia.

(Choice 4) is one of the causes of vitamin B_{12} deficiency. However, it occurs in postgastrectomy patients or in patients with pernicious anemia. The history of ileal resection points to malabsorption of the vitamin B12-intrinsic factor complex from the terminal small bowel as the cause of vitamin B12 deficiency.

(Choice 5) could result from Crohn disease secondary to the chronic bloody diarrhea. However, this would result in a microcytic anemia.

22. Question **1 points**

A 60 year old man consults a physician because of intense forefoot pain on one side that is triggered with exercise. One week earlier, he ran a 25-km marathon, and the pain started midway through the race. He continued to run anyway, as he wished to finish the race, and the pain disappeared within seconds of finishing. He rested the next day, and then began to run the following

day. The pain started much more quickly this time, and he stopped running when it did. The pain persisted for a few minutes and then stopped. He then rested for 3 days, to give his foot time to heal. When he began to run again, his forefoot began to hurt almost immediately, and he decided to consult a physician. Which of the following is the most likely diagnosis?

1. Achilles tendinitis
2. Epiphysitis of the calcaneus
3. Fracture of the posterolateral talar tubercle
4. Metatarsal stress fracture ✔
5. Posterior Achilles tendon bursitis

INCORRECT ✖

The correct answer is 4.

This history is typical for metatarsal stress fracture. This common sports injury usually involves the second, third, or fourth metatarsals, which have thin diaphyses. Diagnosis is usually by history; radiography may not demonstrate the fracture until the 2nd or 3rd week after injury, when a callus forms. Palpating the swollen area of the foot causes pain. Risk factors include a cavus (high arched) foot, osteoporosis, and shoes with inadequate shock-absorption. This type of fracture rarely requires a cast, and healing typically takes 3-12 weeks.

(Choices 1,2 & 5) Achilles tendinitis, epiphysitis of the calcaneus, and posterior Achilles tendon bursitis cause heel pain .

(Choice 3) Fracture of the posterolateral talar tubercle causes pain behind the ankle.

23. Question

1 points

A 44 year old man is admitted for treatment of infection with Staphylococcus aureus. His course is complicated by the development of dry gangrene on his right toe. His blood pressure drops to 85/48 mm Hg, and he is bleeding from multiple sites. A peripheral blood smear shows multiple schistocytes. Laboratory evaluation of prothrombin time (PT), partial thromboplastin time (PTT), and platelets would most likely show which of the following?

1. Elevated PT, elevated PTT, decreased platelets ✔
2. Elevated PT, elevated PTT, elevated platelets
3. Elevated PT, normal PTT, decreased platelets

4. Normal PT, elevated PTT, decreased platelets
5. Normal PT, normal PTT, decreased platelets

INCORRECT ✖

The correct answer is 1.

The patient has disseminated intravascular coagulation (DIC), which can be caused by trauma, shock, malignancy, or obstetric complications. It involves massive activation of coagulation, overwhelming of inhibitors, and depletion of factors. This results in platelet consumption, elevation of PT and PTT, and appearance of schistocytes on peripheral blood smears.

(Choice 2) may be seen in a patient with coagulation factor deficiency and an acute infection. Platelets are an acute phase reactant that may rise in any condition in which the body is stressed.

(Choice 3) may be seen in a patient on Coumadin, which inhibits the function of the extrinsic coagulation pathway.

(Choice 4) may be noted in a patient with thrombocytopenia who is on an anticoagulant, such as heparin. Factor deficiency in the intrinsic pathway may cause a similar increase in PTT.

(Choice 5) may be seen in isolated thrombocytopenia, rather than DIC.

24. Question

1 points

A 75 year old African American man is transferred from a nursing home to the emergency department. For the past 2 hours, the man has had acute, left-sided abdominal pain that started in the left iliac fossa. While waiting to be seen, he suddenly passes stool mixed with dark blood dots. His temperature is 38.1 °C (100.6 °F), blood pressure is 110/85 mm Hg, pulse is 120/min, and respirations are 18/min. Abdominal examination demonstrates localized tenderness along the descending colon. An x-ray film taken after barium enema excludes intra-abdominal free air. The large bowel lumen is decreased and irregular, with mucosal thickening, and there is gas in the wall of the colon. Which of the following is the most likely diagnosis?

1. Appendicitis
2. Colon cancer
3. Crohn disease
4. Ischemic colitis ✔
5. Ulcerative colitis

INCORRECT ✖

The correct answer is 4.

This is the classic presentation of ischemic colitis. Patients are typically in the 6th to 8th decade of life, and can be of any race. In this condition, there is an inflammation of the colon resulting from ischemic damage to the colon wall. Classic x-ray findings are mucosal edema with associated hematoma formation. This is often referred to as thumbprinting. Thickened edematous tissues encroach on air or contrast fluid lumen. Gas in the wall of the colon (pneumatosis coli) is highly suggestive of ischemic colitis. There are many possible causes of ischemic damage, including occlusion of a major artery or vein, small vessel disease, severe hypotension, and intestinal obstruction. Severe ischemic colitis usually requires surgical resection of the involved bowel segment.

(Choice 1) involves the right lower quadrant of the abdomen.

(Choice 2) would produce an ulcer or a mass visible on barium enema.

(Choices 1 & 2) Newly diagnosed Crohn disease or ulcerative colitis would be unusual in a 75 year old, and would produce larger areas of mucosal ulceration and irregularity on barium enema.

25. Question **1 points**

A 65 year old African American man presents with dull, persistent abdominal pain with radiation to the back. He has lost 20 lb over the past 3 months. His appetite is markedly decreased, with associated nausea and vomiting. Laboratory analysis reveals a blood glucose of 280 mg/dL. Physical examination is remarkable for mid-epigastric tenderness and a positive Homans sign in the left calf. He has no significant past medical history. Which of the following is the most likely diagnosis?

1. Chronic pancreatitis
2. Gastric cancer
3. Hepatic cancer
4. Pancreatic cancer ✔
5. Type 2 diabetes mellitus

INCORRECT ✖

The correct answer is 4.

Pancreatic cancer typically has a subtle presentation. This case has many of the classic signs of pancreatic cancer, such as dull, persistent abdominal pain. This pain differs from the burning, episodic pain associated with ulcer disease. Weight loss is often a sign of

malignancy, and glucose intolerance is suggestive of destruction of the beta islet cells, which produce insulin. Pancreatic cancer often causes a hyper coagulable state, which can lead to deep venous thrombosis, evidenced in this patient by Homans sign (increased resistance or pain on dorsiflexion of the foot). All this together strongly suggests pancreatic cancer.
(Choice 1) presents with atypical abdominal pain radiating to the back, which is usually persistent and not relieved by antacids. Weight loss and signs of malabsorption, such as abnormal stool, are common. Alcoholism is the most common cause in adults, whereas cystic fibrosis is the most common cause in children.
(Choice 2) Patients with gastric cancer usually present with chronic, noncolicky epigastric pain that ranges from postprandial fullness to severe, steady pain. There is associated anorexia, weight loss, and anemia from blood loss. Late signs include an enlarged liver, Virchow node (supraclavicular), and Sister Mary Joseph nodule. Glucose intolerance is not a feature of gastric cancer.
(Choice 3) presents with right upper quadrant pain. A mass can often be palpated in the liver. Increased α-fetoprotein and alkaline phosphatase are common laboratory features. Patients usually have a history of chronic liver disease.
(Choice 5) typically presents with polyphagia, polydipsia, and polyuria. Each of these symptoms is caused by elevated serum glucose. Type 1 diabetes is characterized by an acute onset over several days and may be associated with weight loss or may even present as diabetic ketoacidosis. Type 2 diabetes usually has a more gradual onset, classically occurring in obese patients who are often asymptomatic.

26. Question

1 points

A 56 year old man with a 5-yearhistory of hypertension treated with diuretics and enalapril comes to medical attention because of right flank pain. His temperature is 37 °C (98.6 °F) and blood pressure is 145/95 mm Hg. Physical examination shows tenderness in the right costovertebral angle and bilaterally enlarged kidneys. A urine dipstick test reveals microhematuria. Which of the following is the most appropriate next step in diagnosis?

1. Cytologic examination of urine
2. Ultrasonography ✔
3. CT scan of the abdomen
4. Intravenous pyelography (IVP)
5. Renal biopsy

INCORRECT ✖

The correct answer is 2.
The combination of hypertension and bilaterally enlarged kidneys is highly suggestive of autosomal dominant (adult) polycystic kidney disease, which is often associated with microhematuria as well. A positive family history may be present. Ultrasonography is the diagnostic procedure of choice, since it is extremely sensitive for detecting cystic formations within the kidneys. The disease frequently manifests in young adult or middle-age life. Hypertension is frequently the presenting sign.
(Choice 1) would show no changes (besides hematuria) in this case. It is usually negative in patients with renal neoplasms as well.
(Choice 3) is also a sensitive diagnostic tool in the study of renal masses, but should follow ultrasonography in this setting.
(Choice 4) results in good visualization of the kidneys and urinary tract and is a functional test as well. However, it requires contrast administration and does not discriminate between solid and cystic masses.
(Choice 5) is not indicated for the study of polycystic renal disease. Fine needle aspiration may be used to analyze the content of an isolated cystic mass in case imaging studies have failed to determine whether it is of benign or malignant nature.

27. Question **1 points**

A 54 year old man comes to the physician because of right leg pain for 4 months. He describes it as a deep pain in the calf muscles that occurs intermittently after walking for a given distance and subsides after a few minutes of rest. He has been smoking 20-30 cigarettes a day for the past 25 years and drinks alcohol occasionally. His temperature is 36.8 C (98.2 F), blood pressure is 154/93 mm Hg, pulse is 74/min, and respirations are 13/min. Examination shows thinning of the right calf compared with the left, as well as hair loss on the right leg. Reflexes and sensation are normal. Femoral pulses are normal on both sides, but the right popliteal and pedal pulses are barely detectable. Which of the following is the most likely diagnosis?

1. Atherosclerotic stenosis of the common iliac artery
2. Atherosclerotic stenosis of the distal superficial femoral artery ✔
3. Peripheral polyneuropathy
4. Prolapse of intervertebral disk in the lumbar spine
5. Thromboangiitis obliterans

INCORRECT ✖

The correct answer is 2.
The clinical manifestations are characteristic of intermittent claudication, characterized by intermittent ischemic pain arising from inadequacy of blood flow secondary to arterial stenosis. The pain manifests when muscle oxygen demands increase (usually during walking) and subsides at rest. The most common cause of this picture is atherosclerosis of the arteries to the lower extremities, affecting the external iliac or the superficial femoral/popliteal segments. In this case, the presence of normal femoral pulses and the weakening of popliteal and pedal pulses on the affected site point to the site of stenosis. The distal segment of the superficial femoral artery is often the first to be affected by atherosclerotic change, which then progresses to involve the popliteal artery. Several risk factors for atherosclerosis (smoking, hypertension) are present in this patient.
(Choice 1) would give rise to similar clinical manifestations, but the femoral pulse would be weakened or absent.
(Choice 3) The pain caused by peripheral polyneuropathy usually affects the distal extremities in a symmetric fashion, manifests at rest and often at night, and is frequently associated with paresthesia/hypoesthesia and decreased reflexes. Diabetes and alcohol abuse are probably the most common causes in Western countries.
(Choice 4) produces manifestations due to compression of one of the spinal roots, most commonly LS or SL The patient experiences lumbar pain, as well as pain and paresthesias in a radicular distribution. Decreased sensation and reduced reflexes may develop in longstanding cases.
(Choice 5) usually occurs in young males who are heavy smokers. The disease results from acute inflammation of the whole neurovascular bundles, including major arteries, veins, and nerves. Thus, the symptomatology is due to obstruction of arterial and venous blood flow, as well as nerve involvement. Intermittent claudication is common but is associated with signs of venous thrombosis and pain at rest. The disorder often leads to amputation of fingers and toes.

28. Question

1 points

A 56 year old man presents to the emergency department with fever and abdominal pain. He has a past medical history that is significant for hypertension, constipation, and diverticulosis. Two days ago, he began to experience profound left lower quadrant pain and, over the next 48 hours, he had high fevers and nausea. His temperature is 38.3 C (101 °F), and his abdomen is diffusely tender with marked direct tenderness in the left lower quadrant. Laboratory analysis shows a leukocyte count of 18,300/μm^3, with 91% polymorphonuclear cells and 6% band forms. Which of the following procedures would be most likely to confirm the likely diagnosis?

1. Abdominal CT scan ✔
2. Abdominal ultrasound
3. Flat and upright abdominal radiographs

4. Barium enema
5. Exploratory laparotomy

INCORRECT ✖

The correct answer is 1.

This patient has diverticulitis. This disorder classically presents with fever, left lower quadrant pain, and an elevated white count with a left shift. Most diverticula are right-sided, but most ruptured diverticula are on the left. Diverticular disease is associated with constipation and is a significant cause of lower gastrointestinal bleeding. With this patient, the physical and laboratory findings are highly suggestive of diverticulitis, but an abdominal CT scan has the required sensitivity to detect diverticula, as well as any possible abscess formation.

(Choice 2) has no role in diagnosing diverticular disease. Ultrasound is useful for detection of masses, stones, and gross changes in organ size or anatomy. Its sensitivity in detecting small diverticula is less than l0%.

(Choice 3) are not useful tests to diagnose diverticular disease, but are very useful in the ruling out intra-abdominal free air from perforation and small or large bowel obstruction.

(Choice 4) at one time was the preferred method for diagnosing diverticulitis, since the leakage of the barium from the ruptured diverticulum was easily visualized. However, a number of studies have suggested that such leakage is in fact harmful. Largely because of these observations, as well as the readily available nature of CT scanners at most institutions, CT scanning has become the imaging modality of choice for making the diagnosis of diverticulitis.

(Choice 5) is a major surgical procedure and, as such, is limited to cases in which there is such a high suspicion of massive abdominal pathology that even the high sensitivity of CT scan (>95%) is not adequate. An example of such a case would be perforating abdominal trauma.

29. Question **1 points**

A 58 year old woman comes to the physician because of persistent joint aches affecting hands and hips in an asymmetric distribution. The pain is slow in onset and is aggravated by activity. She reports a brief (less than 30 minutes) phase of morning stiffness relieved by heat and movement. She denies fever or weight loss. On the contrary, she has gained approximately 5% of her baseline weight in the past 6 months. Her temperature is 37 °C (98.6 °F), blood pressure is 130/80 mm Hg, pulse is 74/min, and respirations are 12/min. Examination reveals nodular thickening of the distal interphalangeal joints without redness. Mild limitation in joint motion is appreciated bilaterally in hand joints and in the right hip joint. The patient's walking is characterized by a slightly shortened length of stride on the right side. Cardiac and respiratory examination reveals no abnormalities. At this time, which of the following is the most appropriate next step in diagnosis?

1. No further evaluation necessary ✔
2. Complete blood count and erythrocyte sedimentation rate
3. Blood test for rheumatoid factor
4. Blood test for antinuclear antibodies
5. X-ray studies

INCORRECT ✖

The correct answer is 1.

In the presence of this classic symptomatology, the clinical judgment alone is sufficiently accurate. Thus, no further laboratory or radiologic investigations are needed to support a diagnosis of primary osteoarthritis in a patient with characteristic signs and symptoms. If there are atypical manifestations, further investigations may be indicated to rule out other conditions.

(Choice 2) Complete blood count and erythrocyte sedimentation rate are not needed in this case, but may be occasionally helpful in excluding inflammatory causes of joint diseases.

(Choice 3) would be indicated in the presence of signs and symptoms suggesting rheumatoid arthritis. Symmetric involvement of small joints, associated with low-grade fever, fatigue, and prolonged stiffness, suggests the need for rheumatoid factor testing.

(Choice 4) is useful in ruling out collagen vascular diseases. Among these, systemic lupus erythematosus may present with polyarticular inflammation, but this is usually associated with multiorgan involvement as well as constitutional symptoms.

(Choice 5) are not necessary in the diagnostic assessment of typical osteoarthritis. Radiologic signs of degenerative osteoarthritis include narrowing of joint space, osteophytes, subchondral sclerosis, and intraarticular bone fragments ("joint mice").

30. Question **1 points**

A 55 year old man has been known for many years to have cirrhosis of the liver secondary to hepatitis C. His clinical condition had been stable until approximately 3 months ago, when he seemed to decompensate. He has developed worsening jaundice, increased ascites, and mild encephalopathy. For the past 3 weeks he has also complained of vague, constant, right upper quadrant abdominal pain. Physical examination shows a nodular liver, but it is no different than it had been in the past. CT scan demonstrates the presence of a solid tumor mass near the dome of the right lobe, where it could not be felt by palpation. The mass is approximately 8 cm in diameter, and it was not seen on a CT scan that had been done a year earlier. Because of the location of the mass, the radiologist is reluctant to attempt a needle biopsy. Which of the following is an additional useful diagnostic test in this patient?

1. Alpha-fetoprotein (AFP) ✔
2. Carcino embryogenic agent (CEA)
3. 5 hydroxy-indoleacetic acid (SHIAA)
4. Hepatitis C titers
5. Portal vein angiogram

INCORRECT ✖

The correct answer is 1.

AFP is the blood marker for hepatocellular carcinoma, the tumor most likely to be present in this man. Although moderate elevations of the marker will occur just because of the cirrhosis, higher levels are virtually diagnostic for the tumor.

(Choice 2) is the marker for metastatic colon cancer. Had the background been the discovery of a liver mass in a patient who previously had had colorectal cancer resected, this would have been the correct answer.

(Choice 3) is diagnostic for the carcinoid syndrome. Liver masses also would be a feature in that condition, as patients do not develop the syndrome unless they have liver metastasis. The clinical picture would have included episodes of flushing of the face, diarrhea, and bronchoconstriction. Long-term damage to the right side heart valves might also have been present.

(Choice 4) This man will have elevated titers for hepatitis C, and the levels will not be diagnostic for the development of cancer.

(Choice 5) Should a surgical resection be planned, arteriograms might be done. Studies of the portal vein would be less likely to be undertaken, and if done they would add only information about location and spread, rather than about the nature of the tumor.

31. Question **1 points**

A 25 year old man comes to the physician because of the rapid onset of pain and swelling of his left knee, which began 24 hours ago. His temperature is 38.5 °C (101.3 F), blood pressure is 125/70 mm Hg, pulse is 98/min, and respirations are 20/min. His personal history is significant for IV drug abuse. He denies a history of sexually transmitted diseases. The left knee is tender, swollen, and warm to the touch. Chest auscultation is normal. Which of the following is the most appropriate next step in management?

1. Blood studies including complete blood count (CBC)
2. HIV testing prior to instituting any treatment
3. Plain x-ray films of the joint

4. Nonsteroidal anti-inflammatory and empiric antibiotic therapy
5. Diagnostic arthrocentesis ✔

INCORRECT ✖

The correct answer is 5.

This clinical picture is consistent with septic arthritis. IV drug abusers are prone to developing joint infections (as well as endocarditis) due to Staphylococcus aureus. Fever and local inflammatory changes restricted to a single joint (i.e., monoarthritis) are sufficient clues to the correct diagnosis. Swelling of the joint indicates that there is probably an effusion within the articular cavity. The next step is to confirm the diagnosis and isolate the offending agent by performing aspiration of the joint fluid. Microscopic examination will allow confirming the nature of the effusion (transudate versus exudate) and ruling out crystal-related joint disease (gout and pseudogout).Culture of the fluid will most likely yield S. aureus in this case.

(Choice 1) Blood studies, including complete blood count (CBC), are useful additional investigations. However, arthrocentesis is more important in management.

(Choice 2) HIV testing is appropriate in this case, considering the high frequency of HIV infection among IV drug abusers. However, the results would not have any influence on the specific therapy for septic arthritis.

(Choice 3) Plain x-ray films of the joint are not helpful in diagnosis or management of infectious arthritis.

(Choice 4) Nonsteroidal anti-inflammatory and empiric antibiotic therapy prior to arthrocentesis would be a mistake in this context, since isolation of the pathogen is necessary to institute appropriate antibiotic therapy.

32. Question

1 points

A 28 year old man presents to the emergency department with complaints of fever, chills, and malaise for the past 3 days. He also complains of nausea, headaches, and anorexia. The patient denies any homosexual practices but admits to occasional IV drug use. Examination of his palms and soles reveals painless macules; on auscultation, a loud holosystolic murmur is noted. Which of the following is the most appropriate next step in diagnosis?

1. ECG
2. Echocardiogram ✔
3. Chest CT scan with contrast
4. RPR for syphilis

5. Cardiac catheterization

INCORRECT ✖

The correct answer is 2.

This patient is displaying signs and symptoms of acute bacterial endocarditis (ABE), with fever, chills, a heart murmur, Janeway lesions, and a positive history of drug use. A thoracic echocardiogram is the most appropriate first step for finding the vegetations of ABE on heart valves, which are diagnostic. Blood cultures are also diagnostic, but take 2 days for a result and confirm only the bacteremia itself, not its source. Since the mortality is great for ABE, empiric antibiotics should be initiated after three sets of blood cultures are drawn. The organism is most likely Staphylococcus aureus, and the right-sided valves are more commonly affected in N drug users. The tricuspid regurgitation murmur (a holosystolic murmur along the sternal border that increases with inspiration) should always suggest the diagnosis of S. aureus endocarditis.

(Choice 1) ECG findings are not sensitive for diagnosing endocarditis.

(Choices 3,4 & 5) There is no role for CT or cardiac catheterization in this case. The findings do not suggest syphilis; however, both an HIV test and an RPR would provide useful information, although neither would aid in the diagnosis of ABE.

33. Question

1 points

A 71 year old man is brought to the emergency department with acute onset of headache, vomiting, and confusion. The family reports that he has a long history of poorly controlled hypertension with hypertensive renal disease and eye disease that were diagnosed 3 years ago. They report that, a few hours ago, he rapidly developed a very severe headache, and over the next half hour, became more lethargic and confused, and had five episodes of vomiting. His blood pressure is 235/140 mm Hg in both arms, and he appears to have a lateral gaze paralysis on the right. There is no nuchal rigidity, and the pupils appear reactive bilaterally; however, papilledema is evident on funduscopic exam. Which of the following is the most likely diagnosis?

1. Cerebellar hemorrhage
2. Epidural hematoma
3. Putamenal hemorrhage ✔
4. Subarachnoid hemorrhage
5. Subdural hematoma

INCORRECT ✖

The correct answer is 3.

This patient is having a hypertensive hemorrhage. The caudate and the putamen are the most common sites for such bleeds (70%), which can lead to dangerous elevations in intracranial pressure (ICP), as in this patient. The signs and symptoms of increased ICP, when present, portend imminent herniation of the brain and certain death. These patients require urgent intervention to lower their blood pressure.

(Choice 1) is an uncommon site (<5%) for hypertensive hemorrhage. When cerebellar hemorrhages occur, urgent intervention is required because they can cause brainstem compression and/or obstructive hydrocephalus.

(Choice 2) is usually the result of trauma to the squamous portion of the temporal bone of the skull and is not associated with hypertension.

(Choice 4) is infrequently associated with severe hypertension and is usually accompanied by meningismus. Once the SAH is identified, neurosurgical intervention onto stop the bleeding can be performed, and the patient thereafter has a normal life expectancy. The most common nontraumatic cause for SAH is a berry aneurysm in the anterior portion of the circle of Willis.

(Choice 5) results from tearing of the bridging subdural veins, most often due to trauma or shearing forces. It is uncommon without trauma and, even when present, does not tend to produce headache and increased ICP unless very severe.

34. Question **1 points**

A 55 year old woman presents to the emergency department because of chest pain. The pain, which has lasted 3 hours, is substernal and dull in nature, with no relation to respiration or position. The pain does not radiate and is accompanied by weakness, lightheadedness, and nausea. She has received oxygen, aspirin, a continuous infusion of nitroglycerin, and a β-blocker. Her chest x-ray film is normal, and her ECG is remarkable for inverted T waves in leads II, III, and aVF. Which of the following is the most important next step in management?

1. Nifedipine
2. IV heparin ✔
3. IV thrombolytic therapy
4. Cardiac catheterization
5. Percutaneous coronary angioplasty

INCORRECT ✖

The correct answer is 2.
The patient has unstable angina. Unstable angina with ECG changes is associated with critical coronary artery stenosis in most cases. One goal of therapy is to prevent thrombus formation on complex atherosclerotic plaques; heparin is the most effective proven treatment to prevent progression of unstable angina to myocardial infarction. Heparin is also required to maintain vessel patency when using relatively fibrin-specific thrombolytics, such as tPA. Heparin may cause delayed thrombocytopenia in about 10% of cases.
(Choice 1) Nifedipine, a calcium-channel blocker, has no proven benefit in the therapy of acute myocardial infarction. The drug decreases after load and may cause a reflex tachycardia.
(Choice 3) The patient does not meet the criteria for thrombolytic therapy. The best candidate for thrombolytic therapy is one in whom the ECG has distinct regional ST segment elevation or new left bundle branch block. Thrombolytic therapy has not been shown to benefit patients with inverted T waves, ST segment depression, or nonspecific ST-T waves changes and chest pain.
(Choice 4) The patient may eventually require catheterization to see the extent of the coronary artery disease, but it is not the appropriate next step in management.
(Choice 5) Angioplasty should be considered if chest pain refractory to medical management persists, but it is not the appropriate next step in management.

35. Question **1 points**

A 40 year old man consults a physician because of dizziness. The patient has noticed that every time he lays with the right side of his head down, he develops a whirling sensation within a few seconds. This symptom will last as long as the position is maintained, but resolves when a new head position is taken. He does not experience tinnitis or hearing changes during these episodes. Otoscopeic examination is within normal limits. Which of the following is the most likely diagnosis?

1. Benign paroxysmal positional vertigo ✔
2. Cholesteatoma
3. Herpes zoster oticus
4. Meniere disease
5. Presbyacusis

INCORRECT ✖
The correct answer is 1.
This patient has benign paroxysmal positional vertigo. The pathophysiology appears to involve granular masses (tiny rocks) that sit on the cupola in the inner ear, pushing the cilia

(hairs) on the sensory cells down. Certain positions compress the cells more, producing vertigo. Patients should be instructed to avoid the position that sets off the vertigo. A canalith repositioning maneuver is effective in most cases, but chronic cases may require surgical treatment. Some cases resolve spontaneously within a year.
(Choice 2) is a tumor-like, benign lesion that can destroy the middle ear and occurs in the setting of chronic otitis media.
(Choice 3), or herpes infection of the ganglion of CN VIII, causes severe ear pain, vertigo, hearing loss, and sometimes facial nerve paralysis.
(Choice 4) causes the cluster of vertigo, tinnitis, and fluctuating hearing loss, but is usually not triggered by positional changes.
(Choice 5) is a progressive loss of sensitivity to high frequencies with age.

36. Question

1 points

A 62 year old woman with a history of depression and hypertension presents complaining of recurrent falls over the past 6 months. She had been having difficulty with complex tasks at work and was recently asked to leave. On examination, her mental status is unremarkable. Her cranial nerve examination is notable for limited downward gaze. She has prominent, symmetric bradykinesia with more axial than limb rigidity. There is no resting tremor. Her gait is stiff with "en bloc" turning. Reflexes are normal, with downgoing toes. An MRI of the brain is read as showing a small lacunar infarct in the left putamen. She has recently been started on L-dopa/carbidopa but has had little to no improvement in her symptoms. Which of the following is the most likely diagnosis?

1. Basal ganglia stroke
2. Carbon monoxide poisoning
3. Cervical stenosis
4. Parkinson disease
5. Progressive supranuclear palsy ✔

INCORRECT ✖

The correct answer is 5.

Progressive supranuclear palsy is a degenerative disorder that predominantly affects the midbrain and basal ganglia. The clinical hallmarks are symmetric Parkinsonism with vertical gaze limitation and axial rigidity. These patients tend to have falls as their earliest symptoms. There is an associated mild-to moderate dementia that usually involves frontal lobe functions more than hippocampal/memory systems. These patients tend to show a very modest response, if any, to L-dopa/carbidopa. Imaging is typically unremarkable.

(Choice 1) is a common site of small lacunar strokes in patients with hypertension and/or diabetes. Most of these tend to be asymptomatic, and vascular Parkinsonism requires a heavier burden of disease in the basal ganglia. In addition, a unilateral left putamenal lacunar infarct would result in right-sided, rather than symmetric, symptoms.
(Choice 2) results in bilateral pallidal (globus pallidus) necrosis. These patients develop symmetric parkinsonian symptoms but would not be expected to have vertical gaze problems. In addition, an MRI would demonstrate bilateral lesions in the putamen.
(Choice 3) with impingement on the spinal cord can present with falls and a spastic gait but should not affect eye movements or cognition. These patients should have hyperreflexia and upgoing toes.
(Choice 4) typically begins asymmetrically, with resting tremor and rigidity worse on one side of the body. Vertical eye movements are not usually affected. Falls occur but normally a few years into the course of the disease. Patients with idiopathic Parkinson disease will usually experience a pronounced improvement in symptoms when started on Sinemet.

37. Question **1 points**

A 22 year old man presents with burning on urination and a milky urethral discharge for 3 days. He had unprotected sex 5 days prior to the onset of these manifestations. A smear of the urethral discharge demonstrates gram-negative diplococcin neutrophilic granulocytes. The patient reports no allergies. Which of the following is the most appropriate treatment?

1. Amoxicillin
2. Azithromycin
3. Ceftriaxone ✔
4. Doxycycline
5. Penicillin G

INCORRECT ✖
The correct answer is 3.
This is the typical presentation of gonorrhea in men. The infection may regress spontaneously, progress to involve the epididymis and prostate, or become chronic, resulting in urethral strictures. In women, the infection is more often clinically silent, but when symptomatic, the manifestations frequently begin during menses, with frequency, dysuria, and urethral discharge. Chronic cervicitis is an important reservoir of gonococci. If gonococci cannot be demonstrated in smears of the discharge, cultures become necessary. For uncomplicated urethritis or cervicitis, a single intramuscular injection of ceftriaxone, 125 mg, is the treatment of choice and guarantees compliance.

(Choices 1 & 5) Amoxicillin and penicillin G are no longer recommended because of the increasing prevalence of penicillin-resistant strains of gonococcus.
Chlamydial infection develops frequently in association with gonorrhea. Thus, therapy with ceftriaxone should be combined with a drug effective against chlamydia. Erythromycin, 500 mg 4 times daily for
(Choice 2) 1 week, or alternatively azithromycin in a single oral dose of 1 g, may be used.
(Choice 4) is also effective against chlamydia and should be administered at a dosage of 100 mg twice daily for 1 week.

38. Question **1 points**

A 50 year old woman presents with a chief complaint of dizziness when she gets out of bed in the morning. During the episodes of dizziness, she feels very warm and flushed. She admits to frequent episodes of abdominal cramping and severe watery diarrhea during the past year, and she recently began having dry, itchy skin. On physical examination, she has a 2/6 systolic murmur best heard at the left lower sternal border. No wheezing, rhonchi, or crackles are apparent on lung examination. Laboratory results are unremarkable. Which of the following is the most appropriate next step in diagnosis?

1. Barium examination of the bowel
2. Measurement of serum lipase and amylase levels
3. Ultrasound of the abdomen
4. Urinalysis for 5-hydroxyindoleacetic acid (5-HIAA) ✔
5. Small bowel biopsy

INCORRECT ✖
The correct answer is 4.
This woman has carcinoid syndrome. The classic triad of this disorder is flushing (present in 85%), watery diarrhea, and valvular heart disease. The first test for screening carcinoid syndrome is the determination of 5-HIAA (metabolite of serotonin, 5-HT) in a 24-hour urine sample (carcinoid patients may excrete more than 25 mg/day). Carcinoid syndrome is also associated with hypotension, bronchospasm, telangiectasia, and abdominal cramps due to the release of serotonin and vasoactive peptides, especially in bronchial carcinoid. There may also be a secondary niacin deficiency, causing dermatitis, depression, and diarrhea. Symptomatic treatment of carcinoid syndrome consists of giving the synthetic peptide octreotide.
(Choice 1) will often not demonstrate the primary carcinoid tumor, most commonly located in the distal ileum.

(Choice 2) Measurement of serum lipase and amylase levels is indicated in the diagnosis of pancreatitis.
(Choice 3) would be indicated if she had symptoms pointing to an abdominal mass or gallbladder disease.
(Choice 5) is invasive and would not aid in the diagnosis.

39. Question

1 points

A 40 year old woman consults a physician about a "mole" on her neck. The lesion is 2 cm in diameter and slightly irregular, and has a variegated dark red to brown to black color. Wide excision of the lesion demonstrates a malignant neoplasm that extends to a depth of 3 mm. This tumor would be most likely to stain for which of the following tumor markers?

1. Alpha-fetoprotein
2. CA-125
3. Leukocyte common antigen (LCA)
4. Prostate specific antigen (PSA)
5. S-100 ✔

INCORRECT ✖

The correct answer is 5.

The tumor is a malignant melanoma, which is a neoplastic proliferation of melanocytes. The cells in these tumors are related to neuroendocrine cells and often stain immunohistochemically for S-100. The prognosis in malignant melanoma is closely related to the depth of the lesion, since shallow lesions are much less likely to metastasize than are lesions of 1 mm or more thickness, which have reached the rich lymphatic plexus of the superficial dermis. The result is that shallow melanomas have a close to 100% cure rate with wide (typically 1 cm) excision, whereas deep melanomas have a dreadful prognosis since they typically have already metastasized by the time of surgical removal and usually fail to respond to chemotherapy.
(Choice 1) is a marker for testicular and ovarian tumors with a yolk sac component, as well as hepatocellular carcinoma.
(Choice 2) is a marker for some ovarian tumors.
(Choice 3) is a marker for some lymphoid neoplasms.
(Choice 4) is a marker for prostatic carcinoma.

40. Question **1 points**

A 19 year old homosexual college freshman presents to the student health clinic complaining of diarrhea of 2 days' duration. He returned 9 days ago from a spring break trip to Mexico. His diarrhea is accompanied by prominent bloating, flatulence, nausea, and general malaise. On physical examination, he appears to be well hydrated, with a temperature of 36.9 C (98.4 F), blood pressure of 130/86mm Hg, pulse of 89/min, and respirations of 18/min. Examination of the abdomen reveals diffusely hyperactive bowel sounds without tenderness or masses. A stool sample is negative for red and white blood cells. Which of the following is the most appropriate next step in management?

1. Supportive care with IV fluids
2. Treatment with ciprofloxacin
3. Treatment with mebendazole
4. Treatment with metronidazole ✔
5. Treatment with trimethoprim-sulfamethoxazole

INCORRECT ✖

The correct answer is 4.

This patient probably has giardiasis, caused by Giardia lamblia. The diagnosis of giardiasis can often be made clinically on the basis of symptoms of flatulence and bloating appearing several days after a trip to Mexico. Metronidazole is the treatment of choice for giardiasis.

(Choice 1) is used for patients with Escherichia coli "traveler's diarrhea" who are severely dehydrated. Patients generally have diarrhea the day after they return from their trip, rather than 1 week later.

(Choice 2) is effective for Shigella and Salmonella infections. Patients usually have fever and blood or leukocytes in the stool, since these agents are invasive.

(Choice 3) is indicated for infection with helminths.

(Choice 5) is not effective against Giardia lamblia.

41. Question **1 points**

A 26 year old woman has a 10-yearhistory of type 1 diabetes mellitus. She has maintained strict glycemic control and has had no significant diabetic complications so far. On her last routine examination, her blood pressure is 125/78mm Hg. Blood chemistry studies are within normal limits. Funduscopic examination reveals no evidence of diabetic retinopathy. Which of the following is the most appropriate next step in management to prevent diabetic nephropathy?

1. Periodic measurement of serum creatinine levels
2. Screening for microalbuminuria with dipstick examination of urine
3. Screening for microalbuminuria with 24-hour urine collection ✔
4. Administration of ACE inhibitors
5. Renal biopsy

INCORRECT ✖

The correct answer is 3.

Diabetes mellitus is the most common cause of chronic renal failure in all industrialized countries. Diabetic nephropathy is one of the most severe complications and manifests on average 10-15 years after the onset of diabetes. The earliest expression of diabetic nephropathy is microalbuminuria, while the patient is otherwise asymptomatic. This is the rationale for screening diabetic patients for microalbuminuria, which should be performed by 24-hour urine collection or on an early morning urine sample. In the latter case, dipstick screening **(Choice 2)** may not be sufficiently sensitive. The albumin: creatinine ratio in an early morning urine sample is a convenient alternative to 24-hour collection. A ratio 10 is abnormal; between these two values, re-evaluation is recommended. During the phase of microalbuminuria, aggressive treatment, including strict glycemic and blood pressure control, is in order.

(Choice 1) Measurement of serum creatinine levels would not be valuable in detecting preclinical renal damage.

(Choice 4) Treatment with ACE inhibitors has been shown to slow progression of renal nephropathy, possibly because of the reduction of intra-glomerular pressure. This treatment is not widely used if microalbuminuria absent and the patient is normotensive.

(Choice 5) is not indicated in asymptomatic diabetic patients as a method for prevention of renal disease.

42. Question

1 points

A 45 year old woman consults a physician because of chronic fatigue. A review of systems reveals long-standing stomach problems characterized by slow digestion and delayed emptying of her stomach. A complete blood count demonstrates a moderately severe megaloblastic anemia. Serum vitamin B_{12} level is 85 pg/mL; serum folate is 3 ng/mL; and serum iron is 105 mg/dL. Autoantibodies to intrinsic factor are detected in the serum. A biopsy of the stomach is most likely to show which of the following?

1. Acute erosive gastritis

2. Gastric atrophy ✔
3. Linitis plastica
4. Ménétrier's disease
5. Peptic ulcer

INCORRECT ✖

The correct answer is 2.

The patient has pernicious anemia, in which gastric atrophy is associated with megaloblastic anemia due to vitamin B_{12} deficiency. The gastric atrophy characteristically involves the corpus, with sparing of the antrum. Most cases appear to have an autoimmune basis, with antibodies to parietal cells detected in 90% of patients; antibodies to intrinsic factor and the proton pump (H+ /K+ ATPase) are also commonly present. The lack of parietal cells and the damage to the proton pump lead to markedly decreased acid secretion by the stomach. Lack of intrinsic factor leaves the small bowel unable to absorb vitamin B_{12}, leading to megaloblastic anemia.

(Choice 1) is seen most often in severely ill patients, who develop multiple small gastric ulcers.

(Choice 3) is an aggressive form of adenocarcinoma of the stomach that produces a "leather bottle" stomach.

(Choice 4) is characterized by markedly thickened gastric folds with mucous gland hyperplasia. It presents with weight loss and severe protein wasting because of protein loss from the gastric mucosa.

(Choice 5) usually occurs in the setting of Helicobacter pylori infection or NSAID use and is very rare in pernicious anemia, since gastric acid secretion is markedly diminished.

43. Question **1 points**

A 72 year old man who was recently diagnosed with lymphoma has been undergoing chemotherapy for the past 3 weeks. He now develops acute renal failure. His laboratory studies reveal a creatinine of 4 mg/dL, urea nitrogen of 15 mg/dL, and uric acid level of 20 mg/dL. Which of the following would most likely have prevented this patient's acute renal failure?

1. Allopurinol ✔
2. Diphenhydramine
3. Furosemide
4. N-acetylcysteine

5. Nifedipine

6. Urinary acidification

INCORRECT ✖

The correct answer is 1.

Instituting chemotherapy in this patient has resulted in tumor lysis syndrome (TLS). TLS results from the acute lysis of lymphoma cells and the acute renal failure from the precipitation of uric acid and hypoxanthine in the renal collecting tubules. Patients should receive allopurinol, a xanthine oxidase inhibitor that reduces the synthesis of uric acid, and should be aggressively hydrated prior to the initiation of chemotherapy to reduce the incidence of TLS.

(Choice 2) is an antihistamine that may be used in allergic conditions. Because TLS is not due to a drug allergy, diphenhydramine has no role in its prevention or management.

(Choice 3) Furosemide diuretic is reserved for well hydrated patients with insufficient diuresis. It increases the excretion of water but has not been proven to be beneficial as front-line therapy in TLS. It may contribute to uric acid or calcium phosphate precipitation in renal tubules in volume-contracted patients.

(Choice 4) is used in the treatment of acetaminophen overdose and may be used to reduce hemorrhagic cystitis due to cyclophosphamide and ifosfam. However, it has no role in the prevention of TLS.

(Choice 5) is a calcium channel blocker used to treat hypertension and angina. It has no role in the prevention of TLS.

(Choice 6) Urinary alkalinization, not urinary acidification, is a method of managing TLS. Intravenous sodium bicarbonate promotes alkaline diuresis and acts to solubilize (and thus minimize) intratubular precipitation of uric acid.

44. Question **1 points**

A 30 year old man consults a physician because of weight loss and fatigue. A complete blood count demonstrates an erythrocyte count of 2.2 million/mm^3, a leukocyte count of 105,000/mm^3, and a platelet count of 100,000/mm^3. The peripheral smear shows many abnormal white cells containing multiple Auer rods. Remission is achieved with chemotherapy, and the decision is made to treat the patient with total body irradiation followed by allogeneic bone marrow transplantation. Depletion of which of the following cells in the transplanted marrow tends to decrease the incidence of subsequent graft-versus-host disease?

1. B cells

2. Megakaryocytes

3. Promyelocytes
4. Pronormoblast
5. T cells ✔

INCORRECT ✖

The correct answer is 5.

The patient has acute myeloid leukemia (AML). Auer rods are pathognomonic for AML. Patients who have this disease and undergo bone marrow transplantation in the first remission have a 50% to 60% chance of long-term, disease-free survival. The major complications of allogeneic bone marrow transplantation are infection, failure of graft survival, recurrent leukemia, and graft-versus-host disease. The incidence of graft-versus-host disease can be reduced by removal of T cells from the donor marrow by using monoclonal antibodies, rosetting techniques, or mechanical separation.

(Choice 1) B cells are not as important as T cells in graft-versus-host disease.

(Choices 2,3 & 4) Megakaryocytes, promyelocytes, which are granulocyte precursors, and pronormoblasts, which are erythrocyte precursors, play no role in graft-versus-host disease.

45. Question **1 points**

A 40 year old woman presents to her physician's office with a rash on her legs for the past 4 days. She recalls a recent respiratory infection. On examination, there is a small amount of blood in her nostrils. There are several hemorrhagic bullae in her oral cavity. Her lungs are clear, cardiac examination is unremarkable, and her abdomen is soft with no palpable spleen or liver. Both lower extremities have multiple dark blue ecchymoses.

Laboratory analysis reveals:
Leukocyte count: 9000/mm^3
Hemoglobin: 10.1 g/dL
Platelets: 9000/mm^3
Peripheral smear: Reticulocytosis with normal erythrocytes and megathrombocytes

An ultrasound examination is negative for masses or fluid collections. Which of the following is the most appropriate next step in management?

1. Cryoprecipitate
2. Immunoglobulins
3. Prednisone ✔
4. Plasmapheresis

5. Splenectomy

INCORRECT ✖

The correct answer is 3.

This woman most likely has idiopathic thrombocytopenic purpura (ITP). ITP is most common in adults (women>men) aged 20-40 years. Bleeding, epistaxis, oral bleeding, or menorrhagia can occur, and isolated thrombocytopenia (< 10,000) is characteristic. Ten percent of patients will have coexistent autoimmune hemolytic anemia (note the reticulocytosis and anemia). The first-line therapy is prednisone if the patient is not actively bleeding. Patients who are bleeding may require IV immunoglobulin **(Choice 2)** to block phagocytic activity; in severe cases, splenectomy **(Choice 5)** may be required.

(Choice 1) Cryoprecipitate is effective treatment for von Willebrand disease.

(Choice 4) Plasmapheresis is the treatment of choice for hemolytic uremic syndrome (HUS) in a coagulation disorder setting. The most striking features of HUS are fever, fragmented RBC, and renal failure without neurologic signs. HUS is often seen after a diarrheal illness, particularly after infection with Escherichia coli 0157:H7.

46. Question

1 points

A 30 year old man presents with a rapidly enlarging, single, stony hard, palpable 2.5-cm nodule in his thyroid gland. Thyroid isotope scanning demonstrates the nodule to be "cold."On resection of the thyroid gland with subsequent pathologic examination, the nodule is found to contain follicular structures, some of which have inwardly protruding fibrovascular branching cores covered by epithelial cells. Many of the epithelial cells have "orphan Annie" nuclei. Which of the following is the most likely diagnosis?

1. Follicular carcinoma of the thyroid
2. Graves disease
3. Hashimoto disease
4. Nontoxic goiter
5. Papillary carcinoma of the thyroid ✔

INCORRECT ✖

The correct answer is 5.

Papillary structures within follicles that have epithelial cells with nuclei with cleared centers ("orphan Annie eyes") indicate the presence of papillary carcinoma of the thyroid. It does not

matter whether the papillary structures are present in only a percentage of the follicles; the condition is still considered to be papillary carcinoma. Of all thyroid cancers, 60% to 70% are papillary carcinomas. The condition is more frequent in younger patients but tends to be more aggressive in the elderly. There is usually a single dominant nodule that is "cold" (does not take up radioactive iodine) on thyroid scan. Among the different types of thyroid cancers, papillary carcinoma tends to be the one with the best prognosis overall, and smaller lesions can be treated with thyroid lobectomy alone. Large or more diffusely spreading lesions require complete thyroidectomy, sometimes with ablation of any residual thyroid tissue with large doses of ^{131}I.

(Choice 1) would not exhibit the papillary structures or orphan Annie nuclei seen in this case. Well-differentiated follicular carcinoma can be very difficult to distinguish from normal thyroid tissue.

(Choice 2) would be characterized by prominent hyperthyroid symptoms and would show smaller than normal amounts of colloid on biopsy. This disease is not characterized by a single hard nodule; a symmetric, diffusely enlarged goiter may be found.

(Choice 3) would produce diffuse goiter and would show an intense lymphocytic infiltrate with destruction of follicles on biopsy. Symptoms of hypothyroidism are often apparent.

(Choice 4) produces a goiter that may be either smooth or multinodular, but does not usually have a single dominant nodule. On biopsy, the follicles are typically of a wide range of sizes, and the patient is usually clinically euthyroid.

47. Question

1 points

A 38 year old man is admitted to the hospital after sustaining a pulmonary embolism. The patient has a past medical history significant for two idiopathic deep venous thromboses and takes only an aspirin daily. Three hours ago, he developed acute shortness of breath, pleuritic chest pain, and palpitations. He was taken by ambulance to the hospital. In the emergency department, he was diagnosed with a pulmonary embolus on the basis of clinical signs and symptoms and a ventilation-perfusion scan. He was started on IV unfractionated heparin at that time. Which of the following laboratory tests would be most appropriate to guide therapy with this drug?

1. Bleeding time
2. Factor Xa levels
3. Platelet count
4. Prothrombin time (PT)
5. Partial thromboplastin time (PTT) ✔

INCORRECT ✖

The correct answer is 5.
The dose of traditional unfractionated heparin required for anticoagulation can be determined by following the partial thromboplastin time (PTT). Heparin prolongs the PTT. This test is performed by adding particulate matter to a patient's blood sample to activate the intrinsic coagulation cascade; the PTT therefore reflects activity of the intrinsic coagulation pathways.
(Choice 1) reflects the interaction of platelets with the vascular endothelium leading to the formation of an initial clot. An abnormal bleeding time usually reflects abnormal or diminished platelets.
(Choice 2) is used to follow the dosing of the newer, low-molecular-weight heparins.
(Choice 3) may be followed while giving IV heparin, since a significant minority of patients will develop heparin-induced thrombocytopenia. The platelet count, however, is not the test used to monitor efficacy of heparin therapy and any dosing changes.
(Choice 4) is a measure of the extrinsic coagulation system. This value, and the corresponding international normalized ratio (INR) of patient and normal PTs, is particularly sensitive to deficiencies in factor VII. It is usually used to help guide Coumadin therapy.

48. Question

1 points

A 48 year old man presents to the physician's office with progressive hearing loss in his right ear for the past several months. He describes a ringing and hissing sound in his right ear, and he feels unsteady on his feet, as if he is losing his sense of balance. His past medical history includes syphilis, which was treated at age 20, and bronchial asthma, which is controlled with medications. On physical examination, right-sided facial numbness is noted, and a Rinne test shows air conduction that is greater than bone conduction. Routine laboratory profile is normal, and rapid plasma reagin is negative. Which of the following is the most likely diagnosis?

1. Acoustic neuroma ✔
2. Benign positional vertigo
3. Lyme disease
4. Meniere disease
5. Tertiary syphilis

INCORRECT ✖
The correct answer is 1.
Acoustic neurorna, also known as neurilemoma or schwannoma, is a benign tumor that typically arises from the neurilemmal sheath of the vestibular portion of the acoustic nerve in the auditory canal. Symptoms are produced by compression or displacement of the cranial nerves, brainstem, and cerebellum and by obstruction of CSF flow. The trigeminal (CN V)

and facial (CN VII) nerves are often affected because of their anatomic location and relationship to the acoustic nerve. Clinical findings include insidious onset of sensorineural hearing loss, tinnitus, and a sensation of fullness in the ear. Facial numbness, facial weakness, headache, and gait ataxia may also be present; vertigo ultimately develops in 20% to 30% of patients. The most useful diagnostic test is MRI of the cerebellopontine angle. Treatment is surgical excision of the lesion.
(Choice 2) Patients with benign positional vertigo experience vertiginous symptoms only when the head is in a specific position. Symptoms are usually most severe when the patient is in the lateral decubitus position with the affected ear down. Hearing loss is not a feature of this condition.
(Choice 3) There is no specific reason at this time to suspect Lyme disease, although it should be included in the differential.
(Choice 4) Meniere disease is characterized by repeated episodes of vertigo lasting minutes to days, tinnitus, and progressive sensorineural hearing loss.
(Choice 5) Tertiary syphilis or neurosyphilis presents 3 to 10 years after untreated syphilis, with personality changes, ataxia, blurred vision, headache, dizziness, and hearing loss. Pupillary response to light is lost (Argyll Robertson pupils), and there is loss of proprioception and vibration sense. Although this patient has a history of syphilis at age 20, he was treated and his present rapid plasma reagin test is negative. Therefore, neurosyphilis is unlikely.

49. Question

1 points

A 55 year old man presents to a physician because of a 2-month history of difficulty swallowing. At first, the difficulty was only with large bites of solid food, and he was able to limit it by taking smaller bites and washing them down with drinks. However, he now has trouble with small bites and liquids. He has a long history of heavy use of both alcohol and cigarettes. Esophagoscopy demonstrates a large, irregular polypoid mass that is nearly occluding the upper third of the esophagus. A biopsy of the tumor is most likely to show which of the following?

1. Anaplastic squamous epithelial cells with numerous mitotic figures ✔
2. Large, lymphocytic cells with large, prominent nucleoli
3. Mucin-producing glandular tissue with signet ring cells
4. Small, lymphocytic cells with irregular nuclei and condensed chromatin
5. Small, polygonal cells with neurosecretory granules

INCORRECT ✖

The correct answer is 1.
Cancers involving the upper third of the esophagus are usually squamous cell in origin; histologically, they are described as anaplastic squamous cells with numerous mitotic figures. Lower esophageal cancers may be either squamous cell carcinomas or adenocarcinomas (usually arising in Barrett esophagus). Esophageal cancer has a very poor prognosis (most patients die within 2 years) because the cancer usually has advanced through the esophageal wall by the time the patient presents with dysphagia. Because the esophageal wall is thin, it is easy for the cancer to penetrate to the level of the lymphatics (less than 1 mm), where metastasis can occur, or penetrate completely through the esophagus (2 to 4 mm) to directly involve non-resectable mediastinal structures, such as the aorta, heart, or vicinity of the carina of the bronchial tree. Predisposing factors for squamous cell carcinoma of the esophagus include alcohol and tobacco use, human papillomavirus, esophageal scarring (lye ingestion, irradiation), sclerotherapy, and chronic achalasia.
(Choices 2 & 4) Large, lymphocytic cells with large, prominent nucleoli describe large cell lymphoma, whereas small, lymphocytic cells with irregular nuclei and condensed chromatin describe small cell lymphoma. Both of these cancers are unlikely to be found in this patient.
(Choice 3) Mucin-producing glandular tissue with signet ring cells is the classic description of adenocarcinoma. Adenocarcinoma is unlikely to be found in the upper third of the esophagus, and it usually arises in patients who have had long-standing metaplastic changes of Barrett esophagus.
(Choice 5) Small, polygonal cells with neurosecretory granules describe small cell carcinoma of the lung, which is also called oat cell carcinoma. This cancer is strongly associated with cigarette smoking and usually presents as a central or hiker lung tumor.

50. Question

1 points

A 19 year old African American woman with sickle cell anemia has had palpitations and dizziness for 3 days. She works part-time in a day care center. Her temperature is 38.1 °C (100.5 °F), pulse is 110/min, and respirations are 18/min. The cardiac examination is significant for a systolic murmur heard best at the apex. Her lungs are clear, and her abdominal examination is unremarkable. Laboratory studies reveal a hemoglobin of 6.0 g/dL. A blood smear stained with Wright's stain demonstrates Howell-Jolly bodies and the absence of reticulocytes. Which of the following is the most likely pathogen?

1. Influenza virus
2. Parainfluenza virus
3. Parvovirus ✔
4. Salmonella
5. Streptococcus pneumoniae

INCORRECT ✖

The correct answer is 3.

This patient is experiencing an aplastic crisis due to parvovirus infection. Parvovirus exposure is common in daycare centers. Individuals with sickle cell disease, like those with other chronic hemolytic diseases, are susceptible to infection with parvovirus. Patients usually present with weakness, lethargy, and severe anemia that is often preceded by a few days of nonspecific symptoms. These patients have intense reticulocytopenia, and the bone marrow contains no erythroid precursor cells, despite a normal myeloid series. A transient aplastic crisis due to parvovirus infection may produce life-threatening anemia and may require urgent transfusion. Note that Howell-jolly bodies are consistent with asplenism.

(Choices 1 & 2) Influenza virus and parainfluenza virus both present with fever and systemic symptoms, including myalgia, headache, and malaise. Sudden development of severe anemia with reticulocytopenia is not seen in these infections.

(Choice 4) Salmonella infection is more common in sickle cell patients because of splenic hypofunction, but it presents either as typhoidal illness or diarrhea. Selective red cell aplasia is not a feature of Salmonella infection. Note that osteomyelitis due to Salmonella is more common in sickle cell patients.

(Choice 5) Infection due to Streptococcus pneumoniae, although common in sickle cell disease patients because of splenic hypofunction, more frequently manifests as pneumonia or, less commonly, as meningitis.